

# Flow

... THE MAGAZINE WHICH INTEGRATES MATERIAL HANDLING EQUIPMENT INTO THE FLOW OF PRODUCTION



SEASON'S GREETINGS from the Staff

8 Hours  Continuous Operation  
on 1 Gallon of Gas  ... that's

# LOW-COST HAULING



**\$775**  
F. O. B.  
JACKSON

for the 19 out of 20 shop loads which are less than 1 ton

It's a cinch for us to prove that Truck-Man is easy on fuel and upkeep—and that's mighty important. But what's more vital to YOU, we can prove that Truck-Man actually costs less to operate than hand lift trucks . . . whether they're pulled, pushed or led about with the aid of power . . . Speedy, flexible and safe, Truck-Man's hydraulic lift and powerful engine spread handling labor over a vastly greater tonnage of material moved.

Simple controls are grouped in a 12" circle. Big dual

pneumatics provide plenty of traction and riding comfort. The operator *rides with the load*. Instant low or high speeds are at his command. Easy and light maneuverability enable him to turn out a full day's productivity without fatigue or hazard. He's *glad* it's a Truck-Man. And you'll agree that fuel economy is only a drop in the bucket when the red line on your handling costs takes a dive! Check the many Truck-Man features now. Write for new Model D Folder.

Over 70 Truck-Man distributors in principal centers provide standard service

Ask Any Operator About

# truck-man

1418 West Ganson,

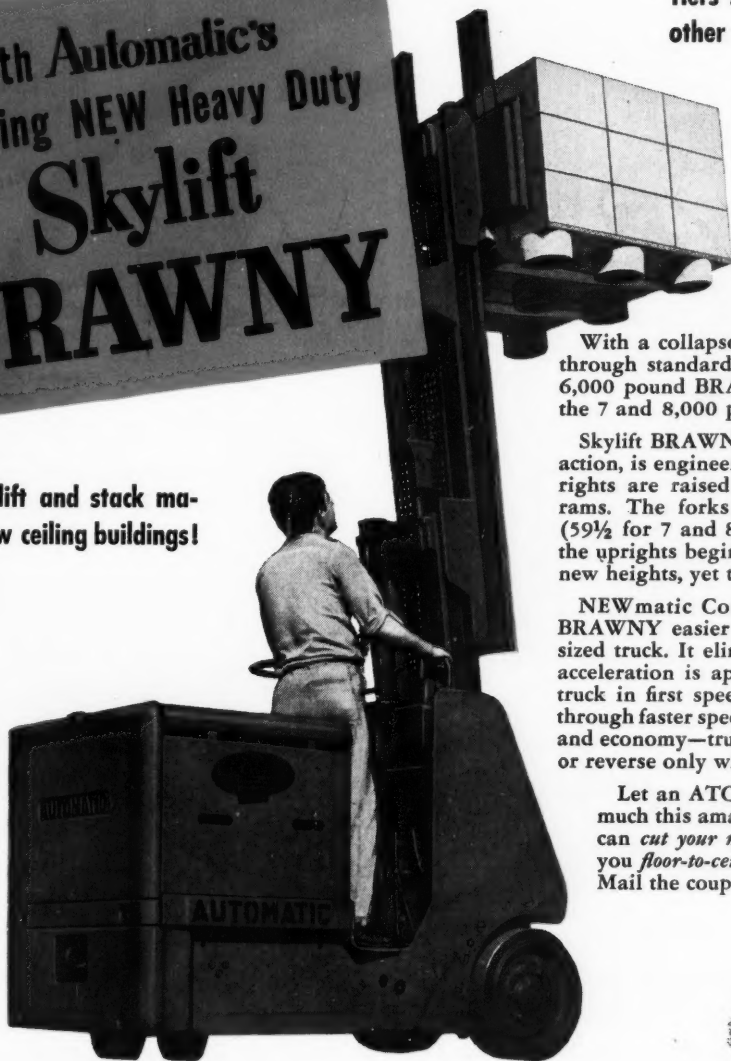
truck-man INC.

Jackson, Mich.

# NOW! STACK HEAVIEST LOADS TO 124 INCHES 2-4 TON LOADS TO NEW HEIGHTS

With Automatic's  
Amazing NEW Heavy Duty  
**Skylift  
BRAWNY**

Yet move, lift and stack material in low ceiling buildings!



Tiers 5 inches higher than any other fork truck of like capacity

Now, for the first time, amazing new Skylift BRAWNY lifts loads of 4,000 to 8,000 pounds to heights never before attained in heavy-duty fork trucks of like capacity. Yet, it also tiers to ceiling heights in boxcars and low-clearance buildings, is smaller, lighter, compact!

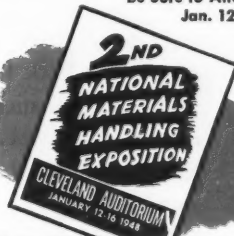
With a collapsed height of 83 inches (pass through standard 7 foot door), the 4, 5 and 6,000 pound BRAWNYS lift to 124 inches—the 7 and 8,000 pound models to 115 inches.

Skylift BRAWNY'S hydraulic lift telescopic action, is engineered so that the forks and up-rights are raised independently by separate rams. The forks thus raise to 62½ inches (59½ for 7 and 8,000 pound models) before the up-rights begin to extend. So you stack to new heights, yet tier in low ceiling buildings.

NEWmatic Controller makes the Sky lift BRAWNY easier to handle than any similar sized truck. It eliminates tire slippage. When acceleration is applied, the NEWmatic starts truck in first speed and automatically passes through faster speeds. Thus you get extra safety and economy—truck can be started in forward or reverse only when in low speed or neutral.

Let an ATCO Specialist show you how much this amazing new Sky lift BRAWNY can cut your material handling costs—give you floor-to-ceiling, extra free storage space. Mail the coupon today!

Be Sure to Attend  
Jan. 12-16



**Skylift  
BRAWNY**

A PRODUCT OF AUTOMATIC

Lightens  
LIFE'S LOADS

MANUFACTURERS OF THE FAMOUS TRANSPORTERS,  
TRANSTACKERS AND SKYLIFT ELECTRIC TRUCKS

DECEMBER, 1947

LOOK TO THE LEADER  
FOR ALL THAT'S NEW!

## AUTOMATIC TRANSPORTATION COMPANY

DIV. OF THE YALE & TOWNE MFG. CO.

141 West 87th Street, Dept. X-7, Chicago 20, Ill.

Please mail me, without cost, complete facts on your new Sky lift BRAWNY Electric Truck.

☐ Have an ATCO Specialist make a free survey of my material handling costs.

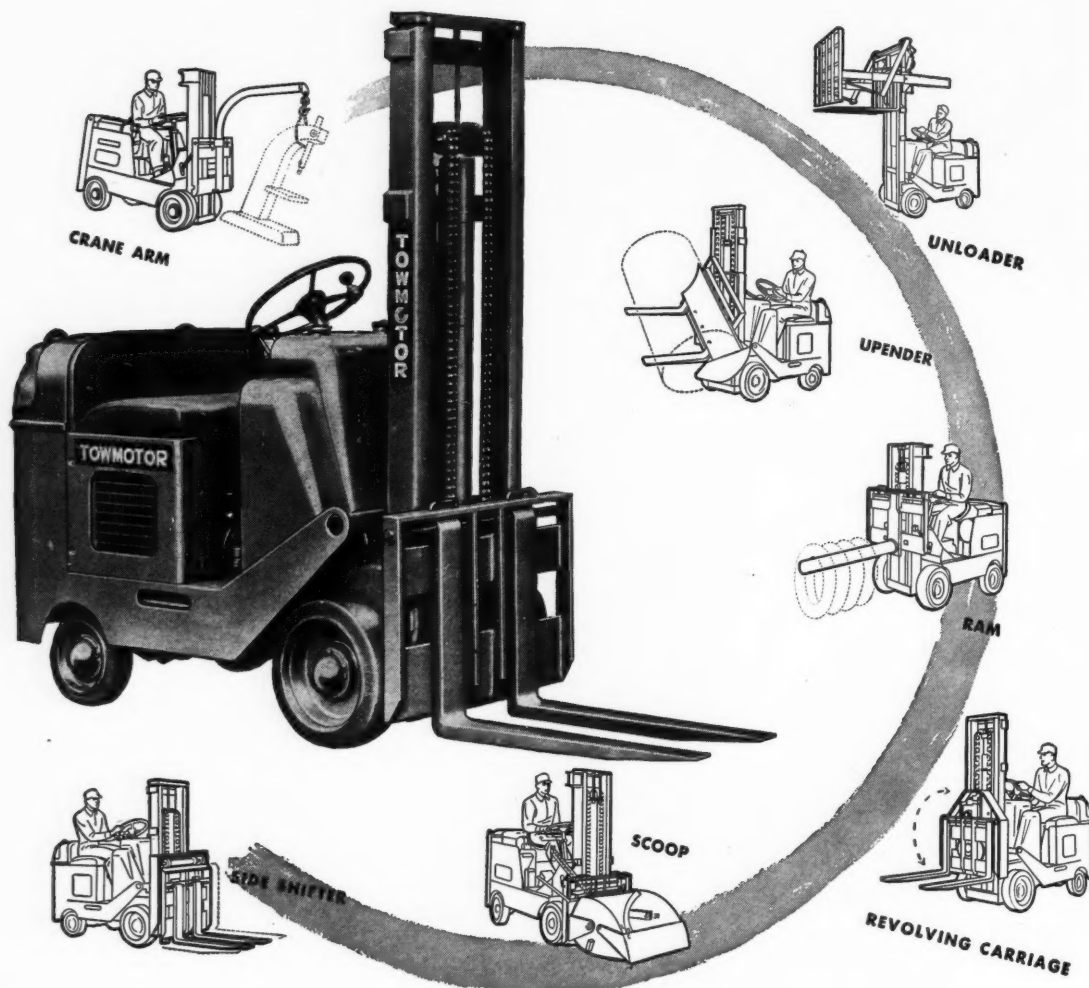
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By..... Position.....

Street Address.....

City..... Zone..... State.....

# There's a **TOWMOTOR** FORK LIFT TRUCK and **ACCESSORY** for Your Job!



Towmotor Fork Lift Trucks provide efficient, safe and economical handling for all materials, regardless of type, shape or size. Now, to still further increase handling efficiency, the accessory equipped Towmotor can also be used for standard fork lift truck operations. Thus it handles the regular, as well as the unusual and

difficult loads that are headaches in so many factories and warehouses. Let Towmotor solve your materials handling problems. Send for Towmotor Accessory Data Sheets today. Towmotor Corporation, Division 8, 1226 E. 152nd Street, Cleveland 10, Ohio.



#### SEND FOR SPECIAL BULLETINS DESCRIBING THE TOWMOTOR

Revolving Carriage • Side Shifter • Un-  
loader • Upender • Scoop • Crane Arm  
Ram • Extension Forks • Extension Backrest  
Overhead Guard



## TOWMOTOR

THE ONE-MAN-GANG

**FORK LIFT TRUCKS  
and TRACTORS**



# Flow

DECEMBER, 1947

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REFRIGERATION INDUSTRY



COVER PHOTO—These core makers stay at their benches while the conveyor belt delivers their output to the ovens at the north end of the layout. See the detailed article of this highly efficient system beginning on page 16. Photo, courtesy Electrical Production Magazine.

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It's a Cinch  
to handle a ton of paper...



For less than the cost of a lead pencil...



### ... WHEN YOU MOVE IT WITH A YALE

Have you ever figured how much it's costing you to handle a ton of material "by hand"? Those who have, found it astoundingly high, especially when expensive, time-consuming piece-by-piece rehandling is considered.

That's why you'll find Yale trucks rapidly replacing muscle methods of handling in every type of industry. For a Yale Truck can lift, shift, stack, even transport materials right onto trucks and box cars, in unit load quantities, easier, faster and at much less cost per ton. This is true regardless of the type of product handled.

Increased storage space, too, is made possible with Yale Trucks lifting loads up to the ceiling by the simple flick of a lever.

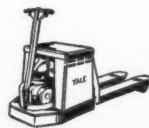
Learn how Yale Material Handling Machinery can save you money.

Send today for **FREE** new  
70-page "How" Book

This material handling handbook, the first of its kind ever to be offered, shows you how to measure your present material handling costs and how to cut them. Send for your free copy today. Ask for the "How" book. Address: The Yale & Towne Mfg. Co., 4563 Tacony St., Phila., Pa.

### MATERIAL HANDLING MACHINERY

CUTS PRODUCTION COSTS... SAVES TIME... SAVES EFFORT... PROMOTES SAFETY



INDUSTRIAL DIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC

# ROUND THE CLOCK POWER



## for Industrial Trucks

In hundreds of industries where production schedules require it, battery industrial trucks are working 24 hours a day, day after day, with a regularity that many people thought was impossible until they saw it demonstrated.

Here are some of the reasons: A battery industrial truck employs electric-motor drives which are inherently simple; have few moving parts to require repair. The truck is kept continuously supplied with power by batteries that are exchanged at convenient intervals, usually 8 to 12 hours. Charging and any other service needed by the batteries is performed while they are out of the truck.

### *It is economical . . .*

A battery industrial truck is also economical. Its batteries are charged from low-cost electric power and they apply the power to the job with high efficiency: instant starting; rapid acceleration; no power consumption during stops. These are exactly the power characteristics needed by stop-and-go handling work.

Thus a battery industrial truck is an inherently dependable and economical machine. It is extra dependable and extra economical when powered by EDISON Nickel-Iron-Alkaline Batteries, the batteries that have steel cell construction, a solution that is a natural preservative of steel, and a fool-proof electrochemical principle of operation. The Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. Offices in principal cities. In Canada, International Equipment Company, Limited, Montreal and Toronto.

### *In Industrial Trucks, EDISON Nickel-Iron-Alkaline Batteries Give You These Important Advantages*

They are **durable mechanically**; grids, containers and other structural parts of the cells are of steel; the alkaline electrolyte is a preservative of steel.

They can be **charged rapidly**; gassing cannot dislodge the active materials.

They **withstand temperature extremes**; are free from freezing hazard; are easily ventilated for rapid cooling.

They are **foolproof electrically**; are not injured by short circuiting, reverse charging or similar accidents.

They can **stand idle indefinitely** without injury. Merely discharge, shortcircuit, and store in a clean, dry place.

They are **simple and easy to maintain**.



**EDISON**  
*Nickel • Iron • Alkaline*  
**STORAGE BATTERIES**



## "... Battery Powered TRUCKS, EXCLUSIVELY

... since we looked beyond the price tag."



The price tag on an industrial truck tells you nothing but first cost. Only performance on the job can tell you what you *want* to know: dependability, true cost per ton handled.

*Dependability* of handling equipment—smooth material flow—is vital to profits, for failures here far outweigh differences in equipment first cost. Also, *low cost electric power* and *negligible maintenance expense*—exclusive with battery-powered trucks—bring years of savings that are profoundly more important than first cost.

To help you compare industrial truck values, we have prepared a factual booklet summarizing the economies and other benefits that, users say, result from the use of battery-powered trucks. This booklet, "LOOKING BEYOND THE PRICE TAG", may be helpful. Write for your copy.

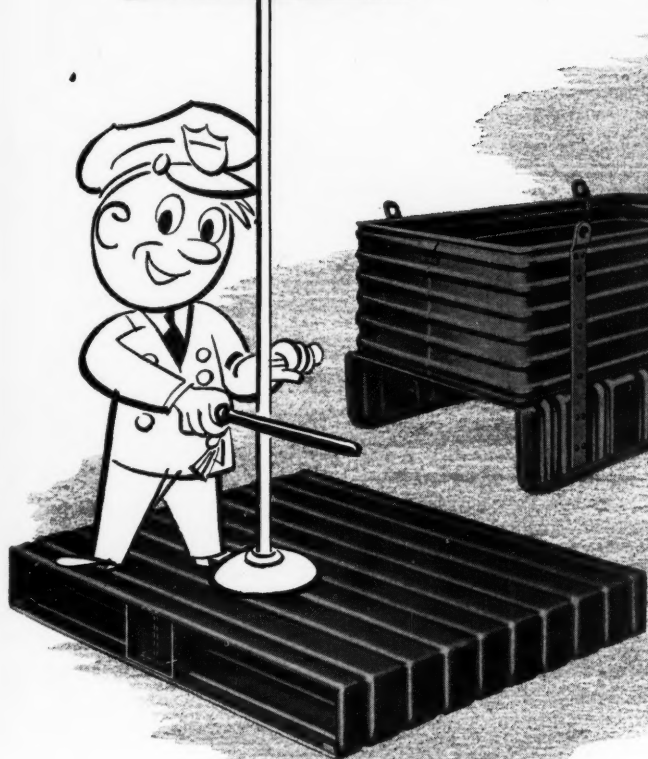
### THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION

29-28L Forty-First Avenue • Queens Plaza

Long Island City 1, N. Y.



# STOP WASTING SPACE!



## Use **UNION METAL** *Engineered* **Materials Handling Equipment**

● Valuable floor space can be kept clear for stepped-up production—loads can be moved faster and easier *in unit loads*—with the help of Union Metal's steel skids, boxes, and pallets.

These sturdy units have proved their worth to thousands of busy plant men in almost every industry. With them you too, will . . .

**SAVE TIME**

**SPEED PRODUCTION**

**CUT COSTS**

Engineered to do their jobs with maximum efficiency, built to withstand hard, steady use, their light weight is combined with amazing strength.

Stock designs to meet standard requirements — "specials" available for your special needs. Complete information and helpful engineering service furnished promptly. Write The Union Metal Manufacturing Company, Canton 5, Ohio.

## **UNION METAL**

*Materials Handling Equipment*

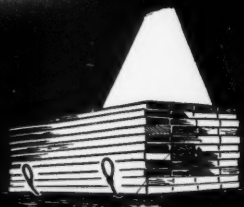
# NOW -- FOR LONGER,



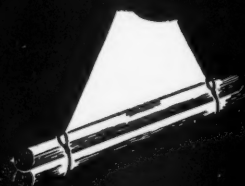
EASIER, FASTER HANDLING OF LOAD AND SLING —



When hoisting loads that  
contact with splice



When pulling out from  
under loads



When using slings  
as chokers

## ROEBLING

A CENTURY OF CONFIDENCE



# SAFER SLING LIFE

## THE ROEBLING

## WALLES SPlice

### NO SERVINGS—NO PROTRUDING WIRE ENDS

HERE'S ROEBLING'S latest aid to safe sling practice—the Walles Splice—to give your slings greater safety and handling convenience, better appearance, lasting stability. Neatly tapered, precisely made, this new splice saves load-handling time because it pulls easily, quickly through restricted openings. It needs no servings . . . all wire ends are securely buried in the center of the splice.

What's more, with no wire ends protruding, injuries to your workmen's hands due to this cause are eliminated. And sling life is lengthened, especially when the splices in your slings are used so that they scrub around or under a load. For

you don't have the loosened or dislodged servings that sometimes cause slings to be prematurely discarded.

The Roebling Walles Splice is made with or without thimbles . . . with some types of fittings attached . . . with standard loop or one made to your specifications . . . in all wire rope sling sizes up to and including 1" diameter. Send coupon for full information today.

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### THESE FREE AIDS TELL YOU HOW TO CHOOSE AND USE THE RIGHT SLING



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With the handy Roebling Sling Calculator you can quickly, surely determine the safe working load for your slings on every class of lift. Printed on the rugged surface of this easy-to-use slide rule are simple yet complete instructions . . . plus tables and diagrams that simplify figuring the correct answers to your hoisting problems.

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Name \_\_\_\_\_

Address \_\_\_\_\_

Title \_\_\_\_\_

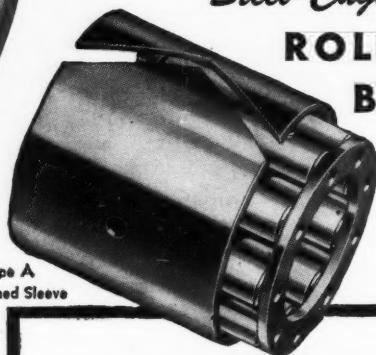
Company \_\_\_\_\_

...how to add up words

**Better Performance  
+ Longer Wear  
+ Lower Cost =**



Type D  
Metric Series



Type A  
Platinized Sleeve

## **ROLLWAY** *Steel-Cage-Type* **ROLLER BEARINGS**

### **Material Handling Equipment Runs Easier and Longer on Rollway Bearings**

To promote greater efficiency of material handling equipment, Rollway specifically designed its Steel-Cage Roller Bearings for easy rolling with sturdy service.

Under heavy loading . . . under the strain of continuous hours of operation . . . Rollway Steel-Cage Roller Bearings prove their practicability by years of satisfaction in many different applications. When buying your equipment, always look for Rollway Roller Bearings.

### **Why ROLLWAY Steel-Cage-Type ROLLER BEARINGS Outlast the Life of Your Equipment**

- They hold starting and operating torque at a minimum.
- The materials, workmanship, fits and finishes of these bearings are strictly in line with the best equipment design.
- They help the equipment give peak performance at a lower power in-put.
- They give longer service with fewer replacements.

+ + +

If you are a manufacturer of material handling equipment, the low price of Rollway Steel-Cage Roller Bearings will reduce your material cost, while their easy mounting will reduce your labor cost.

### **FREE SERVICE!**

Let Rollway Engineers help you select the proper bearing for your equipment. Send us print or detailed statement of load, speed and operating conditions for free analysis and recommendations.

# **ROLLWAY**

**BEARING COMPANY, INC., SYRACUSE, NEW YORK**

BUILDING HEAVY-DUTY BEARINGS SINCE 1908

# **BEARINGS**

**SALES OFFICES: Philadelphia • Boston • Pittsburgh • Cleveland • Detroit • Chicago • Minneapolis • Houston • Los Angeles**





*The HIGHER you stack  
the LOWER your cost!*

# MOBILIFT

## "Tiers to the Top"

Those upper levels of your storage space—are you taking full advantage of them? MOBILIFT's high lift elevator is designed to spot loads on the third or fourth tier as easily as at floor level—an advantage that cuts your costs in many ways.

- Makes overhead space productive.
- Eliminates back-breaking muscle methods.
- Lifts materials too heavy for hand stacking.
- Clears floor space for extra production.
- It's safer — it's faster — it's less expensive.

High stacking is only one of the many ways MOBILIFT can cut your storage and materials handling costs. Let one of our representatives show you how you can save with a MOBILIFT operation.

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### MOBILIFT CORPORATION

835 S.E. Main St. PORTLAND 14, ORE.

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folder on Mobilift operation.

F-

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# MOBILIFT

## MOVES MATERIALS LIKE A GIANT!

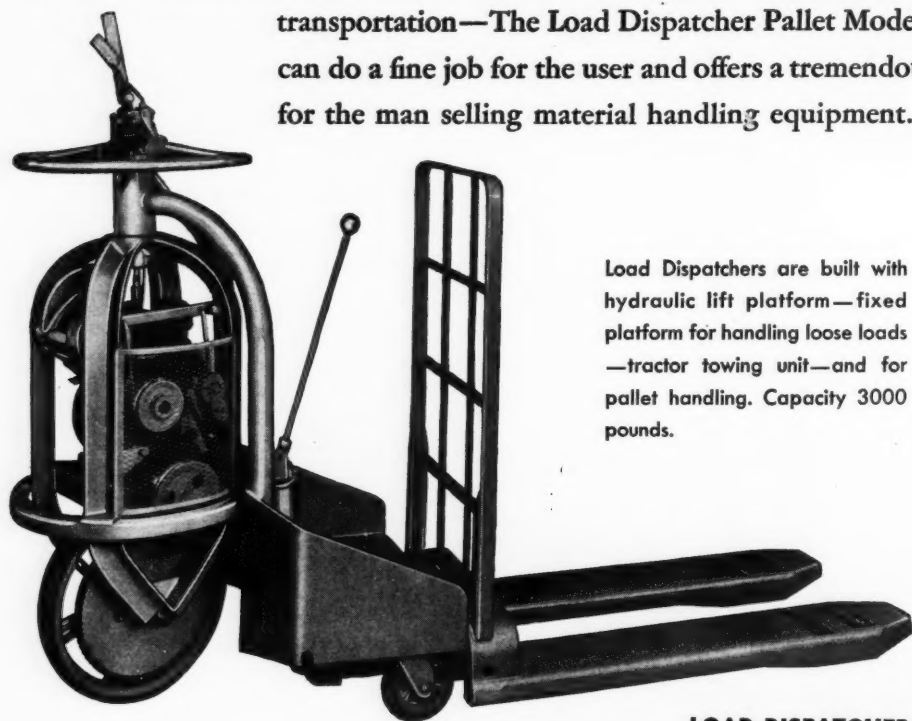
MOBILIFT CORPORATION, 835 S.E. MAIN STREET, PORTLAND 14, OREGON

**BOOTH  
325**

## **MATERIAL HANDLING EXPOSITION**

**WILL BE WELL WORTH YOUR VISIT  
TO CLEVELAND WHETHER YOU ARE  
A DISTRIBUTOR, DEALER, OR USER**

The new 1948 Load Dispatcher models—Hydraulic Lift—Fixed Platform—Tractor Towing Unit—will be on exhibit and there will be shown an entirely new development in pallet transportation—The Load Dispatcher Pallet Model—which can do a fine job for the user and offers a tremendous market for the man selling material handling equipment.



Load Dispatchers are built with hydraulic lift platform—fixed platform for handling loose loads—tractor towing unit—and for pallet handling. Capacity 3000 pounds.

**LOAD DISPATCHER PALLET  
TYPE MODEL P-2748**

There are thousands of material handling jobs that the Load Dispatcher will do better, quicker, and with a saving of money. That's because it *excels in maneuverability—ease of handling—getting around where the going is tight, and for economy.* It has many features of convenience, unique and exclusive, in its power unit and platforms that adapt it to an endless variety of materials and containers. Its quality is unsurpassed and the price is low. It is truly "A Remarkable Truck at a Remarkable Price."

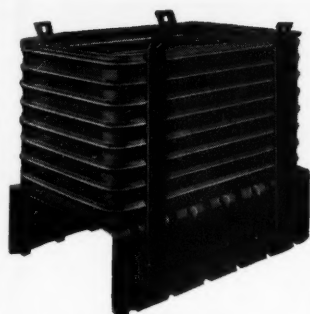
**SEND FOR NEW CATALOG**

**SCHWITZER-CUMMINS COMPANY**

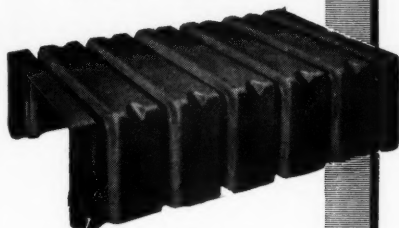
**MATERIAL HANDLING  
TRUCK DIVISION**

**1145 EAST 22nd STREET • INDIANAPOLIS 7, INDIANA**

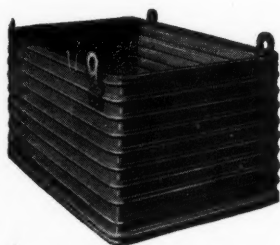
**SOME  
VALUABLE TERRITORIES  
OPEN FOR DISTRIBUTORS  
WHO CAN QUALIFY**



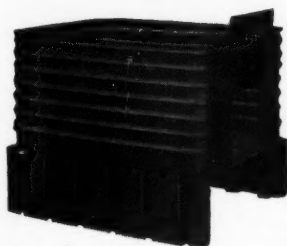
Type PB-120L Truscon Box and Platform with full length lifting lugs.



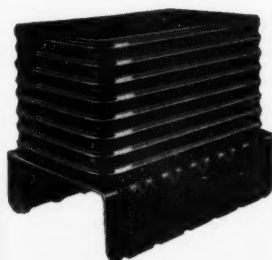
Type P-1. Truscon One Piece Steel Skid Platform.



Type B-80C Truscon Box Equipped for Crane Handling.



Type PB-650 Truscon Box and Platform with sliding End Door.



Type PB-120 Truscon Steel Box and Platform.

# TRUSCON STEEL

## *Materials Handling*

# BOXES and SKIDS

**Plant-Engineered at every point where good design is important**

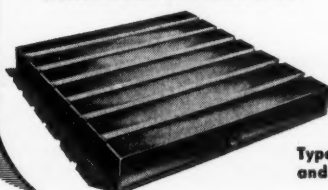
Because of long experience in the materials handling field, Truscon has a wide range of steel boxes and steel skids that will exactly fit your needs. Write for the Truscon catalog of materials handling equipment, to help you plan a traffic system that will encourage greater output per man hour of labor.

The jumbled, helter-skelter handling and storage of materials, parts and finished products has no place in today's efficiency plan for profits. The slow piece-by-piece handling and moving of materials in any step of your manufacturing process, from raw materials to finished product, is costly throughout the day.

Truscon has field men who have helped solve many materials handling problems, and can be of helpful assistance to you. In the competitive period of industry that lies ahead, you will benefit in many ways from Truscon Steel Boxes and Steel Skids —look to Truscon to help you now.



Truscon Double Face Steel Pallet.

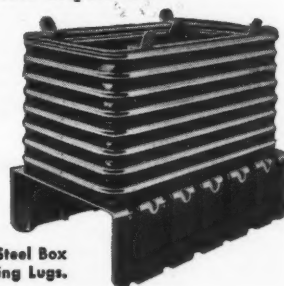


## TRUSCON

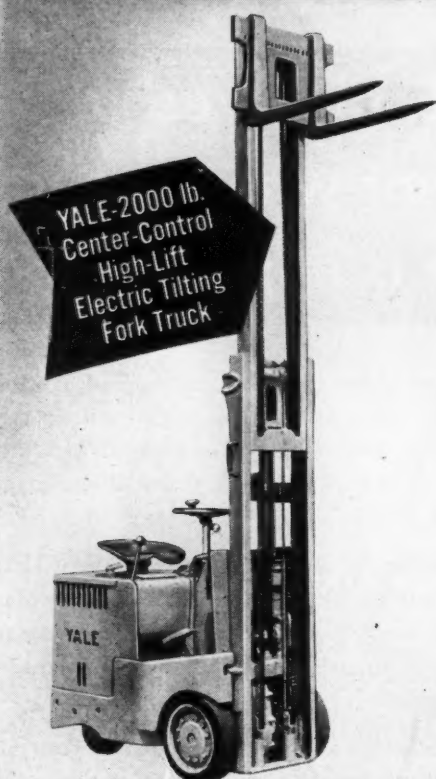
STEEL COMPANY

Pressed Steel Division

6202 TRUSCON AVENUE • CLEVELAND 4, OHIO  
Subsidiary of Republic Steel Corporation



# YOU CAN'T BEAT QUALITY



YALE-2000 lb.  
Center-Control  
High-Lift  
Electric Tilting  
Fork Truck



"WORKSAVER"  
Tilting Fork Truck  
Capacity up to  
2000 lbs. Electric  
Lift and Travel



Specify

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BATTERIES**

with  
**FOURFOLD  
INSULATION AND  
RETENTION**

1. Vertical Fibre Glass Retainer
2. Horizontal Fibre Glass Retainer
3. Perforated Hard Rubber Retainer
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HEAVY DUTY BATTERIES FOR ELECTRIC INDUSTRIAL TRUCKS • ELECTRIC LOCOMOTIVES • DIESEL LOCOMOTIVES  
AIR CONDITIONING AND CAR LIGHTING • TELEPHONE • MARINE • AUXILIARY POWER  
STARTING AND LIGHTING BATTERIES FOR MOTORCYCLES • AUTOMOBILES • TRUCKS • BUSES • INDUSTRIAL EQUIPMENT



# Our Private Crystal Ball... AND THE COMING SHOW IN CLEVELAND



**T**HERE is probably no plant in this broad land of ours which hasn't troubles with increasing costs. Every industry and every plant is at the vortex of its own private little rising cost spiral. All these little spirals go to make the big national spiral which is slowly enveloping us. Economists tell us that (a) only increased production will save us and (b) only lowered costs will save us. Whichever the path of salvation may be, the answer is the same—proper material handling methods.

At this time of the year every one is allowed to make predictions, so we will make ours. The war years saw a greater awareness of material handling methods with a correspondingly greater acceptance of material handling equipment. Under wartime compulsion, industry saw for the first time what planned material handling methods could do.

Now we have a new kind of war. Our war is to keep inflation from engulfing us. Our war is to keep a safe margin between costs and selling prices. Labor cost is a constant. Rent, light and heat are pretty much the same.

In that well worn **OVERHEAD** lies the answer. In most plants the item "overhead" is the burial ground for all hidden expenses. If a laborer carries a ton of material from one place to another by the wheelbarrow load, that cost is "general factory expense" or overhead. The cost of transporting material from one department to another is "overhead". It is a much abused word, a catch-all.

Now here is our prediction. Because we are in a "cold" war, because we are faced with the need for lowering costs, there will be a greater use, awareness and acceptance of material handling methods and techniques and equipment in the next two years than ever before.

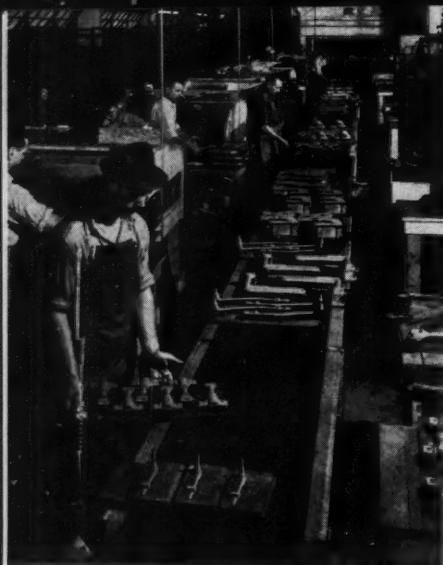
It is not a question of how much such equipment costs (because it reduces production cost per unit). It is, rather, a question of how much it costs **NOT** to have such equipment. In other words, you cannot afford **NOT** to use modern material handling methods. More firms are seriously studying their factory handling methods than ever before—and well they might.

More men are engaged in plant studies than ever before and they are finding a mighty fertile field.

January 12-16, 1948, there will be held in Cleveland the Second National Material Handling Exposition. No executive who is honestly and sincerely interested in doing a top job in his own plant can afford to miss this show. A single idea, a single paper, a single piece of equipment can pay your rail fare on this and a thousand trips like it. This is one of the things you cannot afford **NOT** to attend.

*Irving B. Hexter*

Publisher



**CONTINUOUS FLOW.** 80-foot woven belt, a step from benches, moves cores fast, safely to oven. Belt eliminated leg-work on part of core makers at this foundry.

# HOW TO KEEP *Core Makers* AT THEIR

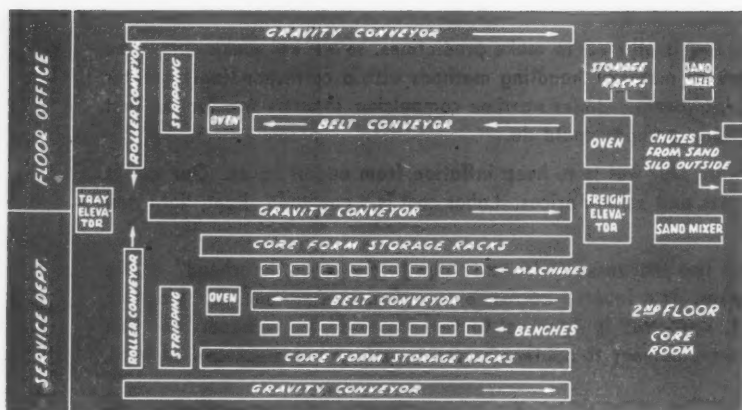
*95,425 cores per day move safely and rapidly from the benches, through the ovens, stripping, inspection—cleaning, and storage to the foundry in this two-floor layout.*

**BUCKET ELEVATOR, BELT, GRAVITY ROLLER AND TRAY CONVEYORS, HOISTS, MONORAIL CARRIERS**

By B. J. DONNER

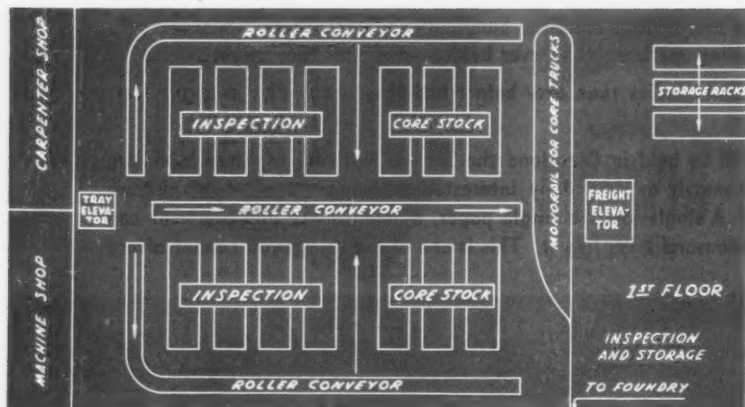
Core Room Superintendent

The Cleveland Foundry Company, Cleveland



**CORE MAKING ROOM, second floor.** Cores flow north in center of each battery; reusable materials flow south along walls of the department.

**INSPECTION, STORAGE, first floor.** Arriving cores flow to inspection benches on each side, south to storage, thence to foundry adjacent to core-making building.



**K**EEPING core makers at their benches and machines, instead of delivering cores to drying ovens, has resulted in a 30 per cent increase in core production. And with the leg-work of core makers eliminated, the job is done with less effort and at lower cost.

This increase has occurred in our new \$500,000 two-story core building which was erected to replace the old foundry core room, source of bottlenecks in production of castings.

The increase in cores is directly reflected in the output of our foundry because adequate supplies of every type are always available. The 95,425 cores used every day involve 175 different shapes and sizes used for 35 makes of gas ranges. We believe ours is the largest grey iron foundry under one roof in Ohio. It is now producing 110 tons of light grey iron castings daily, an increase of more than 25 per cent in capacity over previous years.

Our new core building was erected after a study showed the old core room in the south end of

# R BENCHES

the foundry floor was the source of our trouble. A survey revealed core makers were required to walk up to 15 steps from their benches in taking each pallet of green cores to the drying ovens. With limited capacities in the walk-in and drawer-type ovens, the pallets were left on racks until oven space was available. Meanwhile, molders in the foundry often exhausted the supply of a particular type of core before a fresh supply could be baked. Production was paced by the inefficient drying operation that entailed excessive walking on the part of the core makers.

## Flow for Volume Production

In planning the new building, production flow and handling equipment were given full consideration. With our new setup, raw materials and patterns kept moving to the core makers and all types of cores travel through the processing cycle to the foundry in a continuous flow.

The core building is located adjacent to the foundry. It provides 19,200 square feet of floor space in each of the two stories.

Coremaking begins at the south end of the second floor, where sand enters the building through gravity chutes from two silos. The cylindrical storage bins hold a total of 450,000 pounds of sand. They are filled by a bucket conveyor equipped with a diffuser head to serve either bin. The lower halves of the silos are used for reserve storage. This reserve can be emptied from either bin into the receiving hopper at the base and raised by the elevator to the upper section for use.

Inside the core room, sand flows

from the chutes into three-wheeled trunnion carts, equipped with one swivel caster and two wheels. The carts are lifted and emptied into the mixing machines by 1000-pound powered hoist. Oil used in the mixing process is brought to the second floor by a 3000-pound capacity self-leveling freight elevator. The mixed sand is discharged into the buggies and delivered to the core makers' benches and machines.

## Dual Layout

The core room is divided into

**CORE INSPECTION.** Suspended tray elevator delivers pallets to first floor on way to storage departments.



▼ **RE-USABLE MATERIALS.** Gravity roller line returns forms to storage racks in second-floor core room.

▼ **MONORAIL CARRIERS.** Cores are sent to foundry. Monorail track is adjacent to storage racks.





two identical 40-foot production areas, as shown in the Second Floor Layout.

Core makers' benches and machines are located to either side of an 80-foot powered belt conveyor which runs the length of the battery. The rows of benches and machines are flanked on one side by pallet and core form supply racks.

On completion of a pallet of cores, containing from two to 24 depending on their size, the core maker deposits the load on the 24-inch belt which delivers it to the oven at the north end of the room. The supply of empty pallets and forms is on the racks within convenient reach. The core makers now take but a short step from their benches, either to dispose of cores or to obtain the next order.

Reaching the continuous vertical oven, standing 42 feet from the floor, the pallets are transferred from the belt to the suspended oven shelves by two operators. The speed of the conveyor, ranging from 15 to 35 feet per minute, is governed according to the ability of the two men at the end point of the line to transfer the pallets. The drying cycle takes 1½ hours.

Returned to working level, the baked cores are transferred to racks for cooling before they are stripped of their forms.

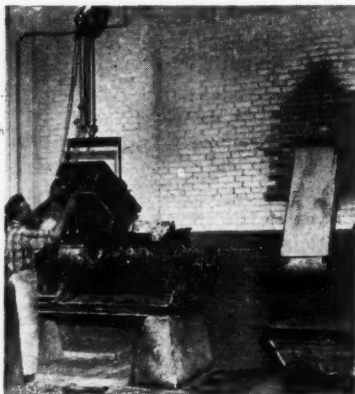
The stripper stands between the racks and his bench. After removing the cores, he places them on 20" x 20" wood pallets and sends them by gravity roller conveyor to the vertical suspended tray elevator operating between the second floor and the core inspection and storage departments on the first floor.

Steel pallets and drying forms are returned to the coremakers by gravity rollers on either side and through the center of the room. Forms used on machines move on the center line and those for bench workers are dispatched along the walls. An operator working in the aisles transfers the pallets of forms from the conveyors to the racks near the core makers' benches and machines.

Thus, the green cores move south to north and through the oven. While empty pallets and forms are routed south for re-use.

In contrast with our old production methods, which required core makers to walk long distances, the

new layout places all equipment and materials within a short step of the operators' work stations. Time, formerly wasted in carrying cores



**SAND MIXING.** 1000-pound hoist dumps carts filled with sand from chute from silo.

to the ovens, is now spent in the production of cores.

#### Inspection and Storage

On the ground floor, the core-carrying wooden pallets are transferred from the traveling shelves to either of two gravity roller lines. These move east and west to the outside walls and thence south, as shown in the layout of the ground floor. Sections of the conveyors, adjacent to the elevator, have three decks to avoid a bottleneck in unloading, through ample capacity for speedy transfer.

Inspection is performed in the north half of the room, on either side of a center-gravity roller line. Each of the two inspection batteries is served by an operator who brings the material to the tables and removes passed and clean cores. He deposits the pallets of inspected material on the gravity roller line running longitudinally in the center of the room. Thus they travel south to the checking station and storage department, in the south half of this floor.

This layout and work arrangement makes it unnecessary for the women inspectors to leave their stations or to lift any object heavier than a core.

Moving south, the cores are counted and classified at the checking station just ahead of the stock shelves. The checker attaches a tag to each pallet specifying the number of cores, the catalog part number, date, and name of cus-

tomers. (This is important, since the cores must be segregated according to the 35 different makes of gas ranges for which the castings are produced.)

The tag remains on the pallet until cores are sent to the foundry. The number of cores is charged to the job. The tag is then sent to the core room where the same number of units is started through the processing cycle. This system keeps a constant supply of every one of the 175 types of cores in stock at all times on the angle iron racks.

#### Monorail Core Carriers

At the extreme south end of storage is an area, 24 feet wide, extending across the width of the building, from whose west end a door leads to the foundry. This space is assigned to loading of core trucks suspended from an overhead monorail track. The U-shaped track, 175 lineal feet, can be closed at the foundry end by a pull switch. The loaded monorail carriers are moved 60 feet to the center of the adjoining foundry where the trackage separates into two loops to serve the two far ends of the extensive casting floor. More than 2000 feet of monorail trackage is included in the complete installation.

The monorail trucks, double deck type, measure 40" x 90". Each carrier accommodates 16 pallets of cores, eight pallets to a shelf. The decks are suspended at each corner by 3/16" x 1½" strap iron attached to twin-wheel trolley-type swivel hooks running on the monorail.

Core trucks are loaded each evening, ready for distribution to molders in the morning. Empty pallets are picked up in the foundry and returned to the core room for re-use.

This simple and efficient layout of the first floor keeps cores flowing south to the foundry, and re-usable pallets move north to continuous tray elevator and up to core room.

It can be seen that continuous movement of finished cores in one direction and re-usable materials in the opposite direction, on both floors, has eliminated more than one bottleneck: 1. In the production of cores. 2. In the production of castings. 3. In 35 assembly plants dependent on punctual delivery of castings from our foundry.



# Here are the Judges...

## ... FOR THE 1st *Flow* MATERIAL HANDLING COST REDUCTION CONTEST

**H**ERE are the judges for the \$1500 FLOW Material Handling Cost Reduction Contest which closes December 15. The board of judges was announced as manuscripts continued to arrive daily at contest headquarters to beat the deadline.

The judges are:

**RANDOLPH W. MALLICK**, Westinghouse Electric Corp., Pittsburgh.

**RICHARD D. FELL**, National Screw and Manufacturing Co., Cleveland.

**JAMES G. WITTE**, Montgomery Ward and Co., Chicago.

R. W. Mallick is Assistant to Director of Headquarters Manufacturing Engineering Department for Westinghouse. He has spent 20 years in the engineering field with the company. He is also chairman of the Plant Layout Standards Committee of the American Society of Mechanical Engineers, and a member of the sub-committee for material handling of the American Institute of Electrical Engineers.

R. D. Fell has been engaged for more than 10 years in analyzing and determining production costs in industry and is nationally recognized as an authority in his field. He is now Manager of Cost Accounting at National Screw and Manufacturing Co.

J. G. Witte, who has spent more than 20 years in the packaging and material handling field, is Manager of the Merchandise Preparation Department for Montgomery Ward. He is a director of the Industrial Packaging Engineers Assn. and president of the Illinois chapter of the organization.

Judging of the entries will begin immediately after the contest closes. Each manuscript will be considered on the analysis of the cost factors entering into the installation described, with details of the methods used in measuring cost savings; evaluation of the efficiency of present methods over past methods, and the charts, layout and completeness of the entry.

The papers will be given thorough study by the judges, who were chosen because of their outstanding qualifications, nationally known, and their broad backgrounds of experiences in various industries.

All papers must be mailed not later than midnight, December 15, to be eligible for the \$1500 prize awards.

# FLEXIBILITY in Office Furniture ASSEMBLY

CONVEYORS  
CASTER TRUCKS

Operators transfer the sprayed drawers from overhead chain conveyor to the slat conveyor.

*Standard manual and powered devices provide flexible handling at this office equipment manufacturing plant, producing a line of 4,000 diversified products.*

OFFICE equipment and supplies such as filing cabinets, desks, tables, shelving, storage cabinets, partitions, and filing systems are some of the 4000 items manufactured by the Globe-Wernicke Co., Cincinnati, Ohio. Over 30 buildings now house plant facilities, some multi-story and some of one-story construction. The firm was founded in 1882 and began operations at its present location in 1898. As the business grew and new products were added, additional buildings were built and layouts were changed. Today products fall into three classes—those made of steel, wood and paper. There are, therefore, three main lines of flow, one layout for steel products, another for wood items and a third for paper. (The latter is not con-



cerned in this description.) All these lines converge upon a central shipping department where the products are packaged or crated for shipping.

## Layout Provides Short Travel Distance

Through a succession of changes,

the present layouts were arranged so that material in the process of conversion or assembly moves the shortest possible distance. This has a direct bearing upon the type of handling devices used. Castered dollies and hand trucks are extensively employed on short hauls. The piece parts, whether of metal or  
(Turn to page 66)

Desks on castered dollies ride in channel type tracks through desk finishing operations.



Drawers on belt conveyor are fitted into filing cabinet riding on moving slat conveyor.



# Barber-Greene

**for SPEED  
MOBILITY  
ALL-AROUND  
COST REDUCTION**



Wherever free-flowing bulk materials are handled, the new B-G 545 pneumatic-tired Bucket Loader is *right*. It's big and fast—loads at a high production pace. It's easy to put to work in just the right spot—turns in its own length, has the power and traction to crowd into the bank and has a high speed reverse for faster travel around the yard. Simple, centralized controls; electric starter; hard-

lipped buckets; it's engineered throughout to meet up-to-the-minute demands.

The best is never easy to get. Naturally, there is a heavy demand for the 545. That's why we suggest that if you can look ahead to the time you, too, will need one—see your Barber-Greene distributor now. Barber-Greene Company, Aurora, Illinois.



**BARBER-GREENE COMPANY • AURORA, ILLINOIS**

*Constant Flow Equipment*



BUCKET LOADERS



BELT CONVEYORS



PORTABLE BELT AND FLIGHT CONVEYORS



CAR UNLOADERS



SNOW LOADERS



COAL LOADERS

DECEMBER, 1947



BAKER FORK TRUCK

# DEPENDABLE POWER



## EXIDE-IRONCLAD POWER AND BATTERY ELECTRIC TRUCKS

**The efficient, cost-cutting team  
that speeds materials handling**

You gain all along the line when your materials are handled by electric trucks and Exide-Ironclad Battery Power. This modern efficiency team keeps goods moving in greater volume, and saves time and money all day long.

Exide-Ironclad Batteries are preferred for electric truck service because of their great power and dependability... a result of special Exide-Ironclad construction, which is unlike that of any other battery.

One important Exide-Ironclad feature is the positive plate which consists of slotted tubes containing the active material. So tiny are these slots that, while permitting easy access of the electrolyte, they prevent the active material from readily washing away. The results are high power ability, longer life, greater economy and safety.

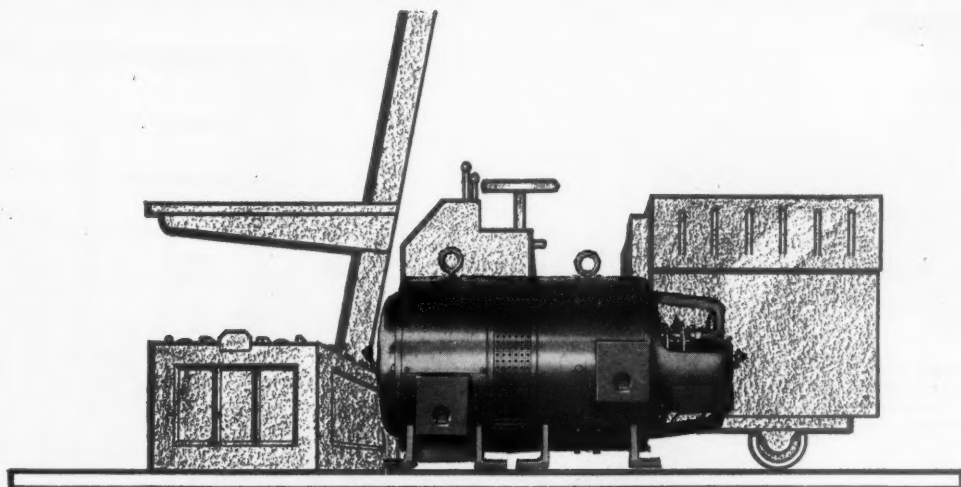
Write us for a **FREE** copy of Exide-Ironclad Topics which contains "Case Studies" of material handling problems. It tells how to cut handling costs up to 50%... covers latest developments in handling materials from receiving to shipping.

THE ELECTRIC STORAGE BATTERY COMPANY  
Philadelphia 32  
Exide Batteries of Canada, Limited, Toronto

BAKER ARTICULATED FORK TRUCK







## THEY GO TOGETHER FOR *Proved Performance*

**B**ATTERY-POWERED industrial trucks have established a record of outstanding performance in every industry. BUT inadequate or unsuitable charging facilities will inevitably shorten battery life, increase maintenance costs and make impossible the maximum usage of the trucks.

In 1910, The Electric Products Company introduced the first AUTOMATIC Battery Charger. Since then, paralleling the growth of materials handling equipment, the development of E.P. Chargers has progressed until, today, they most efficiently and advantageously combine:

- ◆ **Completely Automatic Operation** . . . eliminates the need for specially trained personnel in continuous attendance at Charging Stations.
- ◆ **Modified Constant-Voltage Method of Charging** . . . assures that batteries are properly charged. Generator voltage remains constant within extremely close limits at all loads and temperatures.

- ◆ **A design built specifically for the individual application.** While the parts that go into the assembly of an E.P. Charger are standardized and every one proved by years of field service, every E. P. Charger is designed, built, adjusted and tested to match the needs of the specific batteries it is to service.

*The Battery Charger is not just another piece of equipment required for the Materials Handling System. It's the "core" of the whole operation. It controls the operating continuity of a dollar investment many times greater than itself. Modern plant production . . . and profits . . . depend upon the constant availability of battery-powered trucks. But if the Battery Charger is not capable of doing its job at all times . . . with only minimum maintenance . . . costly production delays will unavoidably occur. Consider too that the life of a properly designed Battery Charger will be many times that of the batteries it serves.*

ASK FOR BULLETINS 203, 205 and 206

**EP**

-X-28

# THE ELECTRIC PRODUCTS COMPANY

1730 CLARKSTONE ROAD

CLEVELAND 12, OHIO



This well-designed plant is typical of many modern businesses where up-to-date methods reduce operating costs.



**MODERN PLANT...**

# Modern Charging

A battery-charging station consisting of three General Electric copper-oxide rectifiers services two fork trucks and one hand truck. Centrally located, these chargers are connected to the truck batteries at the end of the working day. When the charge is completed, the charger cuts off automatically. There is no need for any other supervision. The chargers can also be used to give batteries a noon-hour boost, to maintain peak working efficiency.

**Palletized loads, electric trucks, G-E battery chargers, move materials quickly—keep costs down**

Cost-conscious plant-operating men turn more and more to electric trucks as an economical means of speeding the flow of manufactured products. It's the modern way to boost production efficiency and to cut handling costs.

Battery charging is only part of the story, of course, but it can be very important when operations make heavy demands on mobile equip-

ment. That's where General Electric copper-oxide rectifiers can do a big job for you. They're built to charge electric truck batteries, and to do it quickly and efficiently.

They keep trucks on the job, and put your maintenance worries on the shelf.

Your truck agent can tell you about the many advantages of our copper-oxide rectifiers. Or, if you'd like information for your files, we'll gladly send a copy of our "Aids" booklet on materials handling. For a copy, write to Section A99-1236, General Electric Company, Bridgeport 2, Conn.

**GENERAL  ELECTRIC**

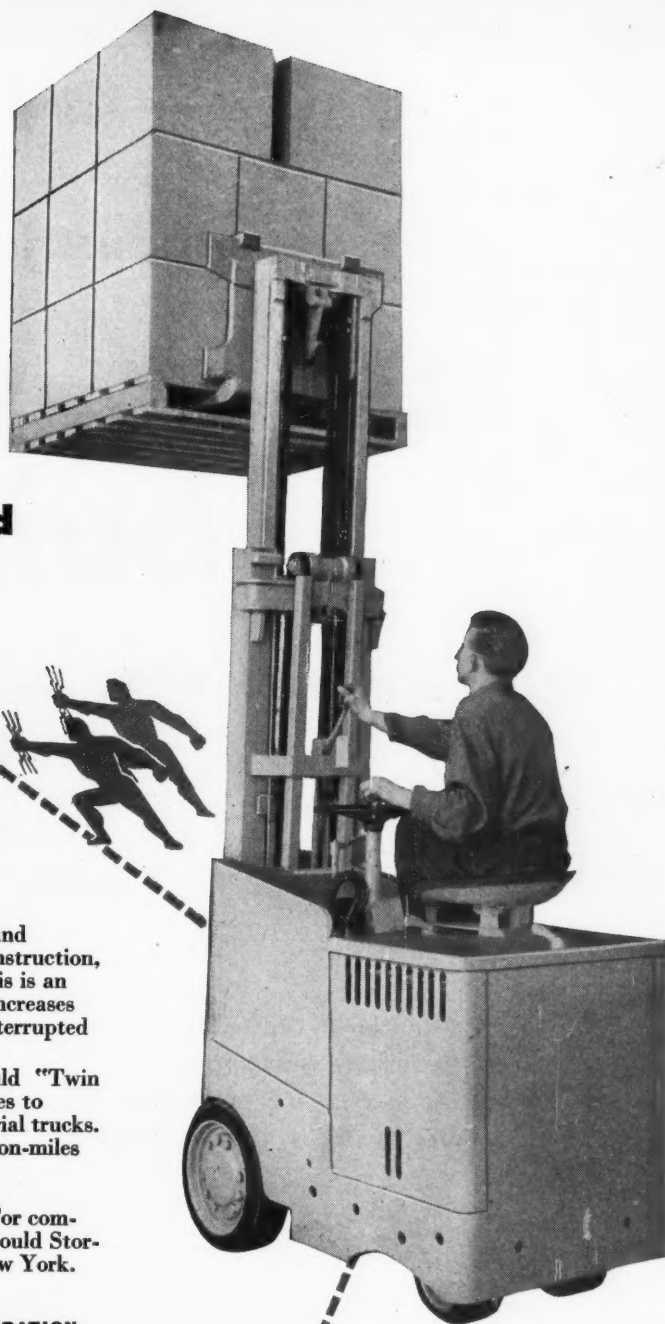
**Your electric  
industrial trucks  
will do more  
work when powered  
by the new**

**"TWIN POWER"  
GOULD  
BATTERY**

**G**OULD research, which introduced and perfected the famous Kathanode construction, has now created "Twin Power". This is an improvement in plate balance that increases power output and insures long, uninterrupted service.

In modern material handling Gould "Twin Power" Batteries add new advantages to the many inherent in electric industrial trucks. Their sustained power means more ton-miles each shift. Thoroughly protected, they are unusually free from service breakdowns: they stay on the job. For complete information get Catalog 100, Gould Storage Battery Corporation, Depew, New York.

**GOULD STORAGE BATTERY CORPORATION**  
Including the  
**Philco Corporation,**  
**Storage Battery Division**



**FOR GOULD SERVICE**

**CALL GOULD IN THE FOLLOWING CITIES:**

Boston, Mass. • Cincinnati, Ohio • Cleveland, Ohio  
Chicago, Ill. • Denver, Colo. • Depew, N.Y. • Detroit,  
Mich. • East Point, Ga. • Kansas City, Mo. • Los  
Angeles, Cal. • New York, N.Y. • Philadelphia,  
Pa. • Pittsburgh, Pa. • St. Louis, Mo. • St. Paul,  
Minn. • San Francisco, Cal. • Trenton, N.J. •  
Washington, D. C. • West Salem, Ore. • Kingston,  
Ont., Canada. NOTE: Electric hand truck batteries are  
stocked at many of these cities.

**GOULD**



**BATTERIES**

DECEMBER, 1947

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Give your industrial trucks the

# ***run-of-your- building***

**WITH AN OTIS POW-R-TRUCK ELEVATOR**

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***An Otis Pow-R-Truck Elevator  
multiplies the usefulness of  
your industrial trucks by the  
number of floors in your building!***



With an Otis Pow-R-Truck Elevator, loaded trucks are free to travel to any floor in your plant. This means no time wasted in re-handling of loads and better utilization of manpower.

Extra-rugged Pow-R-Truck Elevators are the world's only standardized line of elevators built specifically to provide safe vertical transportation for heavy fork and lift trucks . . . the only line specially reinforced to withstand the severe impact and off-balance stresses caused by industrial truck loading. They are available in the size, speed and capacity best suited to your needs.

If you'd like to know more about these Pow-R-Truck Elevators that add the "third dimension" to your materials-handling system, write for Bulletin 664 to Otis Elevator Company, 260 Eleventh Ave., New York 1, N. Y.



**ELEVATOR  
COMPANY**

*Offices in all principal cities*



# Safe and Rugged

# MALLORY

## Rectotruck<sup>†</sup>

# CHARGERS

**M**ALLORY Rectotruck Chargers, designed with the cooperation of the leading storage battery and truck manufacturers, are built rugged. They can be operated on either of two standard power line voltages without danger of overload or damage to your batteries. The Mallory Chargers will withstand a 25% overload without excessive heat rise of the transformer or rectifying elements. They will give an essentially constant output over a range in ambient temperature of 40° below zero to more than 265°.

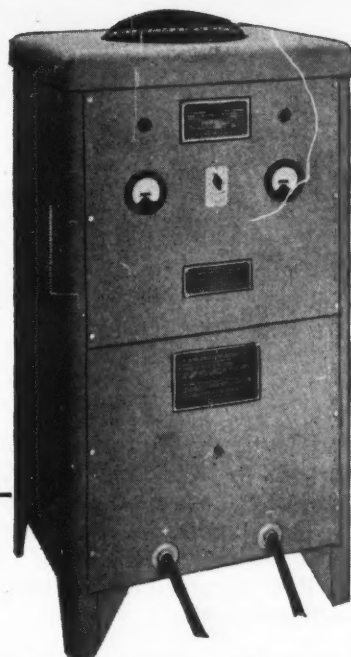
Yet with these outstanding features, the Mallory Chargers are built to be completely automatic in operation—to provide optimum charging characteristics for either lead or Edison batteries—to provide maximum battery life and extremely trouble-free operation. It is only necessary for the truck operator to plug the charger into the battery and turn the control knob. No adjustments or hydrometer readings are required.

Because Mallory Rectotruck Chargers are compact in size, light in weight and require no special foundation, they can be located anywhere in the operating territory of the truck. Therefore it is both convenient and practical to give your batteries a "boost" during noon hours or other slack periods.

There are no extras or accessories to buy with Mallory Rectotruck Chargers. They are now available in three models for charging any electric hand truck battery and three other models for charging standard truck batteries.

Order your charger from your electric truck agent through

Automatic Transportation Co.  
Baker Industrial Truck Div.  
Barrett-Cravens Co.  
Clark Tractor Div.  
Crescent Truck Co.  
Elwell-Parker Electric Co.  
Lewis-Shepard Products, Inc.  
Lift Trucks, Inc.  
The Mercury Mfg. Co.  
The Moto Truc Co.  
Wright-Hibbard Industrial  
Electric Truck Co., Inc.  
The Yale & Towne Mfg. Co.  
Philadelphia Division



The Truck Battery Charger with  
the "Unbeatable Combination"

**MALLORY** and **Exide**

Magnesium Copper  
Sulfide Rectifier

TVR Voltage Relay

(Reg. U.S. Pat. Off.)

Most rugged, dependable rectifier for low-voltage, high-current applications.

Unaffected by high temperature operation under adverse atmospheric conditions.

Phenomenal ability to withstand abuse and accidental short circuits. Self healing.

Stable, consistent charging without adjustment over long life.

Minimum maintenance—no brushes, bulbs, sparking contacts.

Precision temperature-compensated voltage relay.

Exclusive, patented inverse temperature compensating feature.

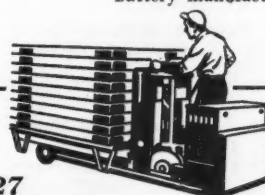
Operates during rapid rise in charging voltage characteristic of a lead battery.

Reduces high initial charging rate to low safe finishing rate.

Starts synchronous timer which controls length of time at finishing rate.

Approved by leading lead battery manufacturers.

†Trade Mark



Rectifier Charger Pioneers Since 1927

**P. R. MALLORY & CO., Inc.**  
**MALLORY** MAGNESIUM-COPPER  
SULFIDE RECTIFIER STACKS  
AND POWER SUPPLIES  
RECTOPLATE\* SUPPLIES—RECTOTRUCK CHARGERS—  
RECTOSTARTER\* AIRCRAFT POWER SUPPLIES—  
RECTOPOWER\* SUPPLIES—AUTOMOTIVE BATTERY CHARGERS

\*Reg. U.S. Pat. Off.

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA

# Mark this date in

**Second National Material Handling Exposition, January 12 to 16 inclusive, in Cleveland, will demonstrate countless methods of eliminating "hidden" costs. Top executives, engineers, factory management personnel, and others concerned with non-productive manufacturing costs will find solutions to their problems.**

**I**NTENSE interest in methods for reducing non-productive industrial costs is expected to bring thousands of top executives, engineers and factory management personnel to the Second National Material Handling Exposition in Cleveland, January 12 to 16, inclusive.

The number of inquiries and requests for reservations has indicated to show officials that the attendance of 12,000 at the previous exposition will be surpassed by a wide margin.

This tremendous response to the announcement of the greatly enlarged show, covering three times the area used last year, has prompted officials to establish Regional Days. The action was taken in order to distribute use of hotel rooms as widely as possible. Exhibitors are expected to cooperate by bringing in their regional representatives only on the regional days specified.

#### SET REGIONAL DAYS

Regional Days are as follows:

**EASTERN:** Monday and Tuesday, January 12-13.

**MIDWEST:** Tuesday and Wednesday, January 13-14.

**WESTERN:** Wednesday and Thursday, January 14-15.

**SOUTHERN:** Thursday and Friday, January 15-16.

Officials pointed out that the major limiting factor on attendance for the Exposition will be the hotel accommodations. With companies releasing rooms, ordinarily held throughout the week, through the Regional Days plan more accommodations will be available to the visitors for whom the show is primarily held.

In addition, more than a 1000 persons are expected to attend a special national session of the Material Handling and Management Divisions of the American Society of Mechanical Engineers. The extraordinary meeting was called by the organization's offi-

cials for the second and third days of the Exposition, January 13 and 14, to take advantage of the tremendous array of material handling exhibits and important discussions scheduled in a single location.

#### PLANT VISITS PLANNED

Members are expected to go on inspection tours of plants in the Cleveland area which have solved material handling problems by use of special methods. Prof. D. K. Wright, Case Institute of Technology, chairman, and E. R. McCarthy, secretary-treasurer of the Cleveland section, are in charge of arrangements.

Meanwhile, committees for the Conference on Material Handling, the Material Handling Theatre, and annual banquet are assembling programs which will be of benefit to those who attend.

Irving B. Hexter, chairman of the Conference group and publisher of FLOW Magazine, declared that more than a dozen topics of vital interest to top management executives will feature the sessions.

With cost reduction through improved handling as the major theme, discussion subjects have been selected for their widest appeal from the practical, operating standpoint.

#### INTERESTING TOPICS LISTED

Based on indicated keen interest by top management executives, according to Hexter, discussion topics already selected for the constantly growing list include:

"Time and Motion Techniques in Material Handling"; "Reckoning with Floor Loads and Elevator Capacities"; "Preventive Maintenance of Equipment"; "Material Handling Factors in Plant Layout"; "Handling Bulk Products"; "Arranging Stock for Effective Handling"; "Safety Principles in Material Handling Operations"; "What Service Ought the Customer Expect

from the Manufacturer?"; "Standardization in Material Handling Equipment"; "Integrating the Use of Different Types of Equipment"; "Handling Small Parts"; "Personnel Relations Factors in Material Handling"; "Vertical, Horizontal and Inter-Floor Handling"; "When Manual Operations Pay"; "Handling Unusual Shapes"; "Planned Packing for Efficient Handling," and others to be added before the Exposition opens.

#### MANY FILMS SCHEDULED

The list of motion picture films showing material handling equipment effectively used in manufacturing processes is still increasing, according to Gordon J. Berry, head of the Material Handling Theatre committee.

Among the companies providing films are Ohio Equipment Co., Inc., Island Equipment Corp., Westinghouse Electric Corp., Clark Tractor, Barber-Greene Co., Vaughan Motor Co., Acme Steel Co., Silent Hoist and Crane Co., The Anthony Co. and Ross Carrier Co.

Arrangements for the annual banquet scheduled for Wednesday, January 14, are underway with the committee, headed by Earl I. Burke.

The principal speaker will be Earl Bunting, president of the National Assn. of Manufacturers and head of O'Sullivan Rubber Co.

The Exposition, in charge of the general committee led by E. J. Heimer, is attracting national attention by its unprecedented development. With more than 180 exhibitors listed at the present time, it will occupy more than three times as much floor space as the previous show. It has grown to rank among the 15 leading industrial expositions in the United States within the period of one year.

Advance information and developments indicate the Second National Material Handling Exposition and Conference on Material Handling will be outstanding in its array of methods and equipment for bringing non-productive handling costs into line in this competitive era. Time and expense devoted by top management executives, financial men, engineers, factory executive personnel, transportation, shipping and warehousing managers to visiting the event will be well spent. It will pay each one, over and over again, to "MARK this DATE in '48."



**T**HIS is a list of exhibitors to date. Additional names of manufacturers are being received almost daily. You will find all major types of equipment and handling methods represented at the Second National Material Handling Exposition.

Acme Pallet Co.  
Acme Steel Co.  
Addison-Semmes Corp.  
Aerol Co.  
Aeroquip Corp.  
Albion Industries  
American Engineering Co.  
American Pulley Co.  
Anthony Co.  
Arkansas Pallet Corp.  
Automatic Transportation Co.  
Automotive Rubber Co.

Baker-Raulang Co.  
William Bal Corp.  
Barber-Greene Co.  
Barrett-Cravens Co.  
Bassick Co.  
Bearing & Transmission Co.  
Bell Aircraft Corp.  
Better Packages, Inc.  
Brainard Steel Division, Sharon Steel Corp.  
Brummeler Steel Products Corp.  
Buda Co.  
E. W. Buschman Co., Inc.

C & D Batteries, Inc.  
Caster & Floor Truck Mfrs' Assn.  
Chisholm-Moore Hoist Corp.  
City Machine Co.  
Clark Tractor  
Cleveland Wire Spring Co.  
Coffing Hoist Co.  
Colson Corp.  
Comet Mfg. Co.  
Conco Engineering Works  
Conveyor Repair Service, Inc.  
Crescent Truck Co.

David Round & Son  
Dempster Brothers, Inc.  
Divine Brothers Co., Inc.  
Drake, Startzman, Sheahan, Barclay, Inc.

Economy Engineering Co.  
Thos. Edison, Inc.  
Electric Industrial Truck Assn.  
Electric Products  
Electric Storage Battery Co.  
Elizabeth Iron Works  
Elwell Parker Electric Co.  
Equipment Mfg. Inc.

Fab-Weld Corp.  
Fairbanks Co.  
Faultless Caster Corp.  
Harry J. Ferguson Co., Inc.  
FLOW Magazine

General Box Co.  
General Electric Co.  
Geneva Metal Wheel Co.  
A. J. Gerrard & Co.

Gerrard Steel Strapping Co.  
Globe Hoist Co.  
Gould Storage Battery Corp.  
J. W. Greer Co.

Harnischfeger Corp.  
W. F. Hebard & Co.  
Hertner Electric Co.  
J. R. Hooper Co.  
Frank G. Hough Co.  
Hyster Co.

Industrial Pallet Co., Inc.  
Industrial Washing Machine Corp., Pallet Division  
Insley Mfg Co.  
Ironbound Box & Lumber Co.  
Island Equipment Corp.

Joyce-Gridland Co.

Kalamazoo Mfg. Co.  
Keen Mfg. Corp.

Lanham Co.  
Lawrence Pallet Exchange  
G. B. Lewis Co.  
Lewis Shepard Products, Inc.  
Lift Truck & Portable Elevators Manufacturers Assn.  
LYON-Raymond Corp.

Magnesium Co. of America  
Manning, Maxwell & Moore, Inc.  
Mansaver Industries, Inc.  
Marsh Stencil Machine Co.  
Material Handling & Power Transmission  
Material Handling Institute  
Material Movement Industries  
Mathews Conveyor Co.  
May Fran Engineering, Inc.  
McGrath-St. Paul Co.  
Meese, Inc.  
Mercury Mfg. Co.  
Merrill Brothers  
Midwest Pallet Corp.  
Midwest Precision Corp.  
Mobilift Corp.  
Monroe Auto Equipment Co.  
Morrison Co.  
Motor Generator Corp.  
Moto-Truc Co.

National Metal Edge Box  
National Pallet Corp.  
National Wooden Box Assn.  
Nook and O'Neill, Inc.  
Nutting Truck and Caster Co.

Ohio Equipment Co., Inc.  
Olack, Inc.  
Orangeville Mfg. Co.  
Otis Elevator Co.

Ozark Pallet Co.

Pallets, Inc.  
Pallet Sales Corp.  
Pallet Systems, Inc.  
Patron Transmission Co., Inc.  
Pittsburgh Steel Products Co.  
Powell Pressed Steel Co.  
Power Crane & Shovel Assn.  
Production Aids, Inc.

Rack Engineering Co.  
Rapids-Standard Co., Inc.  
Ready-Power Co.  
Re-Bo Mfg. Co., Inc.  
Revolator Co.  
Richards-Wilcox Mfg. Co.  
Robbins & Meyers, Inc.  
Ross Carrier Co.  
Rotary Lift Co.

Sabin Machine Co.  
Saginaw Products Corp.  
Schwitzer-Cummins Co.  
Service Caster & Truck Corp.  
Sherman Paper Products Corp.  
Signode Steel Strapping Co.  
Silent Hoist & Crane Co., Inc.  
Sisalkraft Co.  
Skarnes Engineering & Supply Co.  
Smith Power Transmission Co.  
Speedways Conveyors, Inc.  
Standard Conveyor Co.  
Stanley Works  
Steel-Parts Mfg. Co.  
Sterling Bolt Co.  
Stevens Appliance Truck Co.  
Stratton Equipment Co.

Thermoid Rubber  
Thomas Truck & Caster Co.  
Towmotor Corp.  
Transitier Truck Co.  
Truck-Man, Inc.  
Truscon Steel Co.

Union Metal Mfg. Co.  
Unistrut Products Co.  
Unit Crane & Shovel Corp.

Waterman Engineering Co.  
Jervis B. Webb Co.  
Wehrle Conveyor Co.  
West Bend Equipment Corp.  
Westinghouse Electric Corp.  
Whiting Corp.  
Whitney Chain & Mfg. Co.  
Wilkie Co.  
Williford Mfg. Co.  
Wirebound Box Mfrs. Assn.

Yale & Towne Mfg. Co.



# ON THE



# PALLET

## NEWS · VIEWS · TRENDS

**W**. G. REYCROFT, of The Bassick Co., has been elected president of the Caster and Floor Truck Manufacturers' Assn. Other officers named are James H. Robins, of American Pulley Co., vice-president; Philip W. Upp, secretary, and A. B. Anderson, The Nagel-Chase Mfg. Co., treasurer. The latter two men were re-elected. The annual session, held in Cleveland, approved a report showing a 10 percent gain in membership.

\* \* \* \*

**A**CME STEEL Co. declared an extra of 25 cents and the regular quarterly dividend of \$1 on the common, both payable December 12 to stock of record November 21. A similar extra was disbursed September 12. In June the quarterly dividend was raised to \$1 from 75 cents. This brings total payments so far this year to \$4.25. This compares with \$3.30 in 1946 when payments comprised 40 cents March 12, 50 cents June 12, 65 cents September 12, 75 cents December 12 and \$1 extra December 31.—Wall Street Journal.

\* \* \* \*

**I**N VIEW of the threatened shortage of coal this winter, the Robins Conveyors Division, Hewitt-Robins, Inc., announced faster deliveries of its car shakeout to industries in northern sections of the country. The hoist-suspended mainline, introduced a year ago, shakes free-flowing materials out of hopper-bottom cars in a matter of minutes.

\* \* \* \*

**J**OHAN R. HENKLE, Cincinnati District Representative of the Mercury Manufacturing Company of Chicago, died September 24, 1947, due to injuries incurred in an automobile accident on the highway a few days before. Born in Chicago in 1902, Henkle has been active in the material handling industry for over twenty years. During World War II, he served as an officer both in the Ordnance Department and in the Army Air Forces.

\* \* \* \*

**A**LLEGHENY Ludlum Steel Corporation has notified the War Assets Administration that it accepts its counter-proposal for sale to the company of Plancor 99, government-constructed steel plant operated by Allegheny Ludlum during the war in Dunkirk, N. Y. The counter-proposal agreed to sell the plant to Allegheny Ludlum for \$1,500,000, and the company agreed to pay cash. H. G. Batcheller, company president, said that, in addition to the purchase price, his company would spend more than \$500,000 in converting the plant for the production of stainless steel wire. He added that, when at capacity operation, more men will be employed at the plant than at any time during the war.

**C**ONSTRUCTION of a new factory to house facilities for the manufacture of Diesel wheel-type tractors and Diesel motor graders and for the final assembly of scrapers, wagons and rippers has been initiated by Caterpillar Tractor Co., Peoria, Ill.

The unit is the latest building being added to the manufacturers' Peoria plant as an integral part of the Company's expansion program designed to effect increased production of existing products in the company's line and to facilitate manufacture of additional models now in the development stage. The factory will provide approximately 785,000 square feet of manufacturing area. The outer walls will be constructed of brick topped by corrugated steel, insulated, with steel sheeting on the inner walls.

\* \* \* \*

**A**RRANGEMENTS for Great Britain's first Mechanical Handling Exhibition and Convention are nearing completion, with the British Mechanical Handling Magazine as the sponsor. The event is scheduled to be held in National Hall, Olympia, London, from July 12-21, 1948. Leading associations in the industry are collaborating with the organizers to make it completely comprehensive and national in scope. Papers will be given by experts on various handling problems in different industries.

\* \* \* \*

**T**HE Truck-Trailer Manufacturers Association, national organization of commercial freight trailer builders, today estimated that production by the industry this year will be about 55 per cent greater than in the best pre-war year.

Julius L. Glick, association president, said figures for the first eight months this year indicate that the full-year output will total 65,000 units. This, he noted, would compare with a pre-war record of 41,869 vehicles established in 1941.

\* \* \* \*

**T**HE ancient handcraft of pottery making is being increasingly geared in America today to production line methods as the nation's dinnerware industry strives to meet the greatest demands ever made upon it, but clay dust is still the same old problem.

What the industry is doing to protect the health of pottery workers was emphasized in a clinic conducted October 21 in Pittsburgh, Pa., by the United States Potters Association. Methods of dust control and other advanced measures for eliminating health hazards were reviewed in an all-day conference, sponsored by the Plant Hygiene committee of the Potters Association with the collaboration of the Industrial Hygiene Foundation of America, Inc., and held in the Mellon Institute.



# SAVES 51% ON PACKING

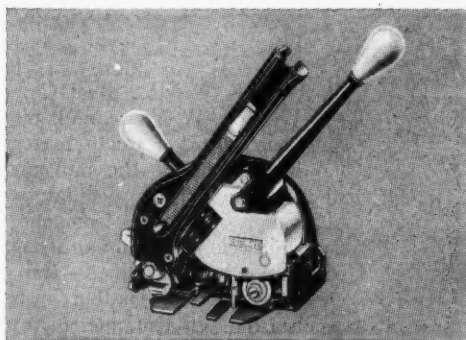
**Acme Steelstrap method cuts crate weight 75 pounds, and saves labor and material for Aetna Plywood & Veneer Company, large Chicago distributor.**

*If packing materials were expensive and hard to get, if labor were scarce and costly, what would you do?*

•Aetna called Acme's Shipping Specialists. Here's what happened: (1) Quantity of crating materials was reduced. (2) Labor time was cut from 25 minutes to 5 minutes per bundle. (3) Bundle weight was reduced by 75 pounds. (4) Fewer men handle a much larger volume than was previously possible. (5) Heavy carrier penalties on improperly packaged L.C.L. and truck shipments are avoided.

Acme's Shipping Specialists are located in principal cities. They are ready to work with you to help solve your general or specific shipping problems *without obligation*.

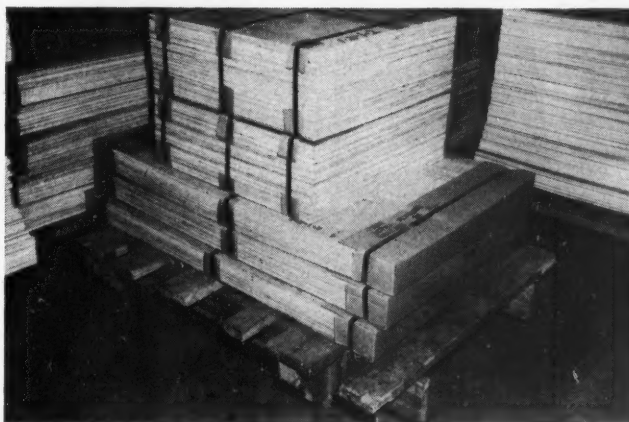
Send the coupon below or write for a booklet containing more true case histories of shipping problems in various industries which have been solved by Acme Shipping Specialists and Acme Steelstrap methods.



**More savings ahead for Acme Steelstrap users—No. 3 Steelstrapper, the lightest tool made, is now available. Magazine holds 100 seals. Tensions, seals, and cuts the strap in one operation. Small base requires only 5-inch strapping surface. Two levers working in opposite directions make for better balance and easier handling.**



▲ **Old crating method**—For one size plywood, crate cost \$1.39 for lumber and \$.375 for labor—a total of \$1.765. Total weight, 350 pounds; contents 20 pieces.



▲ **Acme Steelstrap and Corrugated Sheets**—materials cost per bundle, \$.775, and labor, \$.075—a total of \$.85. The bundle weighs 275 pounds and contains 20 pieces.

Acme Steel Company, Dept. F-127  
2838 Archer Avenue  
Chicago 8, Illinois

Please send me a copy of your case history booklet,  
"SAVINGS IN SHIPPING."

Name .....

Company .....

Address .....

City ..... Zone ..... State .....



**ACME STEEL COMPANY**

NEW YORK 7 ATLANTA CHICAGO 8 LOS ANGELES 11

DECEMBER, 1947

**ACME STEEL CO.  
CHICAGO**



FIGURE 1. This ram truck is only one of four with full-length ram for more than one coil.

**RAM TRUCKS  
BRIDGE CRANES**

## HANDLING COILED STEEL



FIGURE 2. 15,000 pounds of steel on 23,000 pounds of truck enter car over a 1"-thick toe plate.

*How are steel mills solving their handling problems due to continuous and faster rolling?  
Here is Weirton's solution.*

By JOHN D. O'ROARK

Superintendent, Electrical Department  
Weirton Steel Co., Weirton, W. Va.

AT THE Weirton Steel Co. at Weirton, W. Va., careful planning has solved a tough material handling problem—the movement of 1,000 tons of strip per day over inter-plant rail routes from one to five miles long. Railroad freight cars have been modified—and an electric-fork-truck loading system worked out—in a manner dictated by recent increases of average coil weight throughout the steel industry, as continuous and faster rolling has come into use.

The important thing is that our high-speed tandem mills deliver coils ranging from 6,000 to 23,000 lbs. at an amazing rate—a rate which calls for a well-planned handling system, and for freight car



FIGURE 3. Heavy unit has made right-angle turn into car through 144"-wide automobile door.

floor loads far exceeding standard design limits. We took two steps.

We developed a handling system which utilizes both electric ram trucks and overhead cranes, so as to let each class of equipment work on those coils and loadings for which it is most efficient. Second, our company leased from the Pennsylvania Railroad approximately 100 freight cars and reinforced their flooring to take tremendously concentrated floor loads with safety.

#### First Mile-A-Minute Cold Mill

Since May 13th we have had in operation a cold mill—known as No. 6 tandem—which has been called remarkable. It is capable of rolling 38-inch wide strip to 0.008" from hot rolled and pickled stock averaging about 0.090" thick at speeds up to 5,000 ft per minute. Depending upon customers' orders, it is now producing coils from 6,000 to 23,000 lbs. in weight and of widths ranging from 20 to 34 inches at an average rate of one coil every three minutes. In late July Mill No. 6 had already been warmed up to a pace of 3,500 ft. per minute.

In addition, No. 4 tandem mill operates in the same bay as No. 6, and produces its share of coils on about a four to five minute headway—further to magnify the material handling problem.

All coils over 15,000 pounds in weight must be handled by overhead crane and shipped in flats or gondolas. This gets the giant coils up and out of the way in a hurry, and uses the heaviest equipment on the heaviest loads. All coils of 15,000 pounds or less are handled by the ram truck fleet. Since the trucks in the fleet are of 16,000-pound capacity, the 15,000-pound limit safely undercuts the rated figure with consequent great reductions in truck maintenance. As a result, the lift truck maintenance problem at Weirton is almost nil, involving only a weekly check-up of lubrication points, tires, and roller chains.

Of the four ram trucks, the rams of all but one have been cut short to make it impossible to pick up more than one coil at a time. This discourages overloading, but leaves one truck (see Figure 1) with a ram which can pick up two or three "baby" coils with a total weight

safely under the 15,000-pound limit.

The coils which are handled by tilting ram trucks are taken directly into the special box cars, placed, and steel strapped together. If the coils are small enough they are placed three across a car and five deep from the end of the car to the door opening. Then the steel strapping ties all 15 coils together to prevent shifting. The same operation is repeated in the other end of the car. If full 12,000-pound coils are being loaded, only two coils are sufficient to span the width of the car, and the depth of the loading from car end to car door in that case is four coils, making eight coils altogether in each end of the car. In many cases, and especially while freight cars are being moved, the coils are placed in a temporary storage area on the floor of the mill, out of the way of vital movements until box cars are again ready to receive them.

Note in Figures 2 and 3 that, despite the large size of the trucks and their loads, the design is sufficiently compact and the steering so planned that the truck can enter the freight car and turn at complete right angles without difficulty.

So heavy is the load of truck and coil (truck 23,000 and coil 15,000 pounds, totaling 38 tons) that when the combination enters a box car (over a 1-inch thick toeplate between dock and car) one can

**HEAVYWEIGHTS GO THROUGH THE AIR.** 76' 2" span of bridge crane serves aisle in Weirton 48" Strip Steel Tandem Mill. Main hoist capacity is 50 tons, auxiliary hoist capacity, 15 tons. Crane handles about 150,000 tons of steel per month.

**GIANT HOOK.** It is of special forged steel design to speed hook-up and unhooking of large tin plate coils. Floor conveyor advances coils to hydraulic holder that feeds band to No. 1 Stand of Tin Plate Tandem Mill.

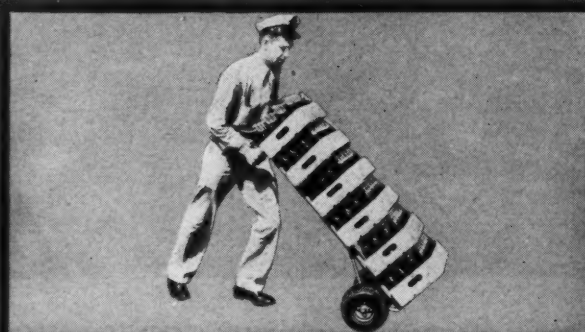




# GENERAL INDUSTRIAL PNEUMATICS

... SPEED PRODUCTION

... INCREASE PLANT EFFICIENCY



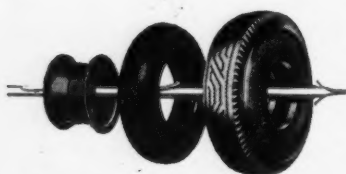
*WHEEL-KEY truck—Equipped with General Industrial Pneumatic Tires—  
Manufactured by The Rapids-Standards Co., Inc., Grand Rapids, Michigan.*

**MOVE MORE LOADS, FASTER, EASIER, SAFER**

In buying or designing new material handling or other mobile equipment—Study these advantages of General Industrial Pneumatic Tires:

*General Industrial Pneumatics . . .*

Move loads faster and more economically . . . Protect floors and floor coverings . . . Roll easier over soft ground or rough surfaces . . . Protect fragile, easily damaged loads . . . Guard against spillage due to shocks or bumps . . . Roll silently—Eliminate noise . . . Eliminate shock and jar to operator . . . Designed for both high and low speed.



*Factory assembled units: Heavy-duty Tire, Separate Tube, Heavy Duty Demountable Wheel and Rim; 8" to 22" o. d. for loads of 180-1900 lbs. per tire.*

Wide base rim design, originated by General, has greater load capacity, guards against side-sway, permits low-bed mobile equipment design with low center of gravity that provides stability and straight-tracking in trailer trains. General has the **ONLY** demountable wheel. Separate heavy gauge inner tubes guarantee maximum air retention.



**THE GENERAL TIRE & RUBBER COMPANY**

Dept. 1, Akron, Ohio

**INDUSTRIAL PNEUMATIC TIRE • TUBE • WHEEL UNITS**

actually see the car tip several inches in the direction of the first corner loaded. This is, of course, compensated for by loading coils alternately, end for end and corner for corner.

## Rail Cars Modified

Notwithstanding, the service on cars is so severe that the following modifications had to be made on the entire 100 cars leased by our company from the railroad for the crosstown runs between mills and the run between the Weirton No. 6 and the Steubenville Tin Mill five miles distant across the Ohio River: (1) double-width automobile-type doors with a full 144-inch opening were installed; (2) the normal 3" oak flooring was doubled to 6", by overlaying with an extra 3" oak surface so that a full 6" of tough wood gives protection against the load actually breaking through the bottom of the car in transit, and (3) a 2"-wide band of  $\frac{3}{8}$ "-thick steel is welded completely around the inside of the car at approximately one foot from the floor level so that any rolling coil will be held by it and not strike the car walls.

In the case of the box car loads made up by ram-truck, it is not necessary to brace the finished loading against shifting, because of the degree to which the floor area of the cars is covered, and the thoroughness of the complete steel-strapping job which makes a unit out of the 8 to 15 coils in each end of the car. With the enormous coils handled by the overhead crane, and placed on their flat ends on gondolas or flat cars, the usual procedure of preventing shifting during transit by spiking and bolting heavy timbers to the car floor is employed.

## Coils Get Bigger—Trucks, Too

In the early years of ram truck handling, a 6,000-lb. coil was enormous. Today a 6,000-pound coil is a mere toy. Even the 15,000-pound maximum ram truck loading is giving way at Weirton. Today much heavier coils can be handled—coils approaching 30,000 pounds.

★ ★ ★

Watch for the Special Second National Materials Handling Exposition issue of FLOW. It will be filled with information of interest to you.



## Diesel Electric Locomotive Cuts Costs \$4,200

USE of a 25-ton, 190-hp General Electric diesel electric industrial locomotive by the W. T. Smith Lumber Company of Chapman, Ala., has reduced operating and maintenance costs by approximately \$4,200 in its first year of service, according to N. Floyd McGowin, president of the lumber company.

At this rate, he estimated, the locomotive, which performs all switching operations on the 15-mile



intra-plant track, will pay for itself in slightly more than four years. The diesel electric was placed in operation at the mill in June, 1946. It replaced a 45-ton, coal burning steam locomotive which since has been sold.

The new locomotive is used for switching all freight cars to and from the connecting main line railroad (a distance of two miles), switching between various stockyards and the mill itself (distances ranging up to one and a half miles) and, when necessary, in logging operations.

Time required for switching operations at this mill, which produces millions of feet of finished lumber each month, has been cut in half since the new locomotive was placed in service, McGowin said, who pointed out that switching operations are now completed in less than half a day. This required a full day with the old locomotive.

During an average day, the Diesel electric switches approximately 20 freight cars to and from the railroad interchange, and spots and removes approximately 10 cars throughout the stockyards. Its operating speed varies with the type of work being performed, the load, and the distance of the run.

## What's Your Bulk Material HANDLING PROBLEM?

**HOUGH**  
SAV HUFF  
**Payloaders**  
PATENTED

*Travel Anywhere!  
Handle Anything!*

A Hough Payloader operates anywhere — inside of box cars, in ship's holds, through narrow doorways, down congested aisles, in your plant or in your yard, the year 'round. It loads, carries, and dumps any bulk material; can be used for yard maintenance and snow removal. Whatever your job may be there is a proper size Payloader to meet your requirements.

Thousands of plants throughout the world are standardizing on Hough Payloaders for all their bulk handling. A speedy, one man operated Payloader will pay for itself in no time, in man-hours saved, in increased production, in lower production costs all along the line.

SEND for new literature today on the 10½ cu. ft. capacity Model HA; the ¾ yard Model HF or the 1 yard Model HL.



**THE FRANK G. HOUGH CO.**  
MATERIAL HANDLING EQUIPMENT SINCE 1920  
721 Broadway, New York, N.Y.

# Processing, Separating and Blending PIT-RUN MATERIAL

**DRAG LINE, INDUSTRIAL CARS, SKIP HOISTS,  
HEAVY RUBBER—CANVAS BELTS**

*In the processing of low-profit bulk materials, low-cost handling is the first requisite. Here is how a leading producer of sand and gravel keeps costs down—by keeping operations up-to-date with modern methods.*

**T**HE American Aggregate Company, Columbus, Ohio, produces more than 20 different grades and blends of sand and gravel for railroad ballast, highway construction and the building industry. The operation is producing in excess of 7500 tons of aggregate per week from a pit located on a 400-acre deposit. Cost of producing this material consists basically of quarrying, crushing, storing, mixing, and loading.

The company's handling costs are at minimum, which is due to the modern engineering in this plant that is only seven years old.

The present installation includes flanged wheel equipment, dragline, bucket elevators, skip hoists, flumes, gravity chutes, and troughed belt conveyors. The latter are used for all movement within the processing plant, for blending, and transfer to the batching and storage building.

DRAGLINE AND 4-CU.-YD. BUCKET. Material is dumped into portable hopper through grizzly.

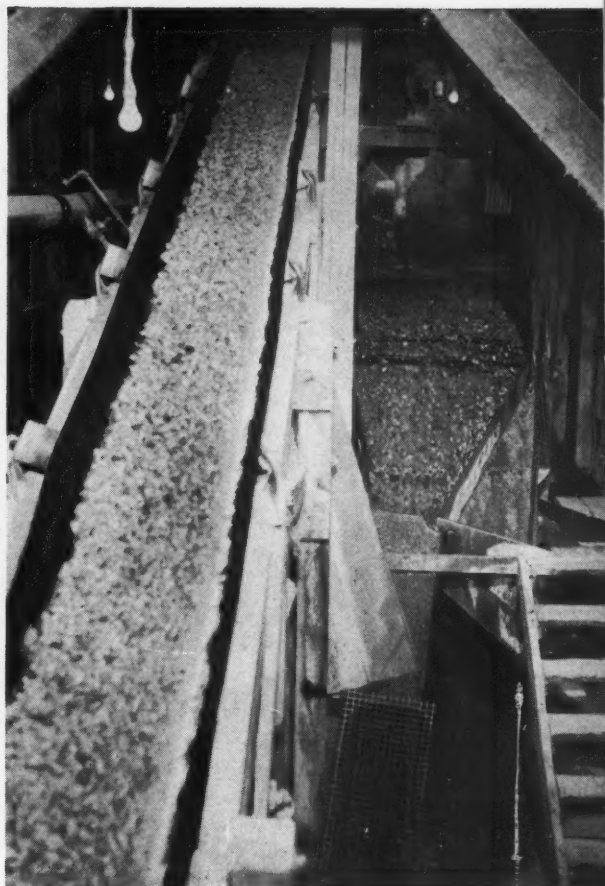


A bird's eye view of this property would show that the quarrying operation is done about a half-mile from the processing point. A 700-foot spur extending north from the quarrying location joins a 2,000-foot track leading to the processing plant to the east. The spur and track create a right angle inside of which the processing plant, batching and storage bins are located. (Approximately 10 miles of track are laid throughout the 400-acre property for future working.)

## Dragline Operation

Quarrying is done by a drag line equipped with a four-cubic-yard bucket. The operation is performed in water from depths of 20 to 60 feet. The drag produces more than 1,000 cubic yards of pit-run material per 9-hour day, making a cut of from 20 to 24 feet every two days. Weight of this material is approximately 3000 pounds per yard. The material is dumped into a portable 80-cubic-yard capacity hopper which spans the adjacent spur. Two specially designed, 20-cubic-yard capacity hopper bottom cars are loaded from a gate under the hopper and are moved to the processing site by a converted 97 h.p. diesel-electric locomotive. The hopper is moved by the drag in conjunction with a third hopper bottom car. The car is run under the hopper and jacks on the sides raise it, permitting car and hopper to be moved.

The pit-run material is dumped from the cars into a 200-cubic-yard storage hopper of steel re-enforced concrete 60' by 20' by 15', located



at the northwest corner of the processing plant (see photographs). The stone and gravel pass through a grizzly (a screen of slanted, inverted rails mounted on 8" centers). This unit shunts large pieces via chute to a primary crusher immediately north of the hopper. As the stone is crushed it is fed back into the hopper by a bucket elevator and chute, the former having a 15-foot carry.

#### Processing, Intermediate Storage

The material is moved from the storage hopper into the plant for the washing, screening, and crushing operations by two 4-cubic-yard capacity skip hoists on parallel tracks which are kept in opposing operation. These descend into a boot under the hopper where they are gravity loaded from 20" by 26" gates operated by compressed air. The skip loading operator must signal to the operator in the hoist room when each car is loaded, the latter operator controlling the hoist

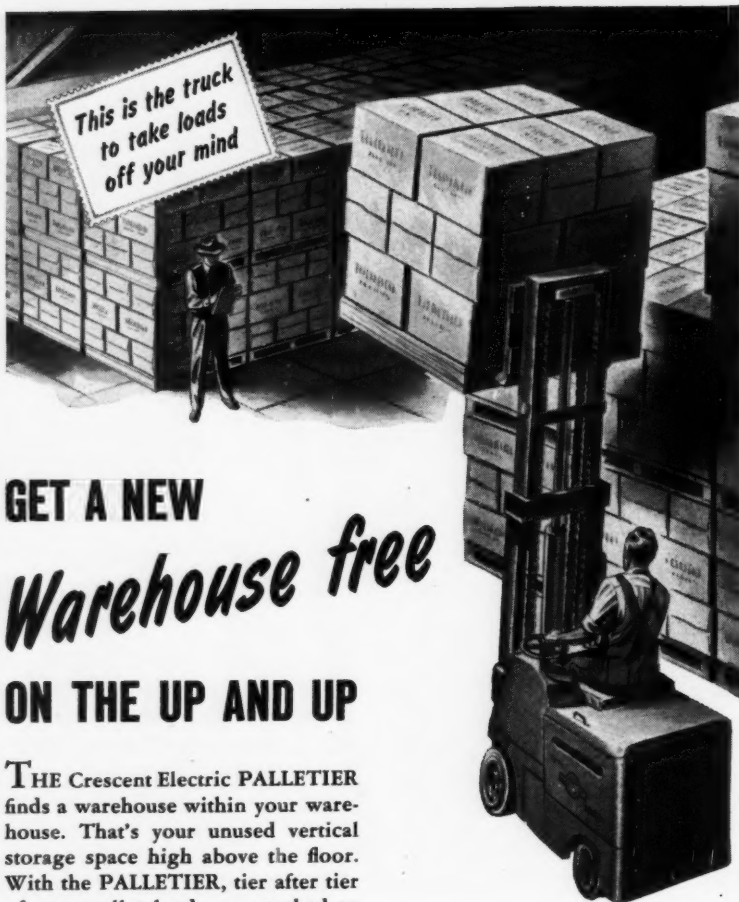
▲ **TO STORAGE HOPPER.** Pit-run material is discharged, then moved by skip hoists to plant.

▲ **TO SECOND SCREENING.** Gravel travels on 60' belt to vibrating screen, then to the bins.

**BELT LINES.** Short one, left has turnhead (arrow) to feed long line, large stockpile. ▼







## GET A NEW *Warehouse free* ON THE UP AND UP

THE Crescent Electric PALLETIER finds a warehouse within your warehouse. That's your unused vertical storage space high above the floor. With the PALLETIER, tier after tier of your pallet loads are stacked to ceiling height. Up they go without heave ho . . . safely, speedily.

Your loading and unloading time shrinks to a minimum. Up steep ramps, down narrow aisles travels the maneuverable, power-packed PALLETIER. Low in initial cost, low in maintenance costs, it soon pays for itself by slashing your handling costs.

Send for free bulletins illustrating and listing Specifications for 1000, 2000, 3000 and 4000-pound Crescent Electric PALLETIERS.

**CRESCENT TRUCK COMPANY**  
1155 Willow St., Lebanon, Pa.

Industrial Truck and Tractor Specialists Since 1917

### FIVE IMPORTANT FEATURES

*Only the PALLETIER Has Them All*

- Full Magnetic Contactor Control protects against forced acceleration—extends life of motor and tires.
- Complete Stability with load fully elevated and tilted forward.
- Battery Power eliminates fumes and fire hazard.
- Full Accessibility to all mechanisms for easy inspection and maintenance.
- Maximum Visibility—operator spots and tiers without stirring from seat.

movement. The cars travel 225' from the boot a height of 65' to the hoist room, where the material is dumped into a 16-cubic-yard hopper.

This continuously feeds a 60" triple-jacket barrel screen which is washed by a flow of water delivered by an 8" centrifugal pump. All material under 1½" is taken out through the screen while all over-size material moves by gravity chute to the crusher. (Barrel screen sizes are 1½", 1", ¾".)

Vibrating screens fed by chute from the barrel screen jackets sort the sand and gravel and feed the assorted sizes by chute to storage bins. The water which washes both the barrel and vibrating screens drains into two flumes. These carry the residual sand at a height of 40' a distance of 60' and 125' to further double-screening operations which remove and sort fine gravel from the sand.

The stone over 1½" will not pass through the barrel screen and moves by chute to four crushers which in turn feed by chute to a bucket elevator. This is fitted with sup-r-capacity buckets on 18" centers. The crushed material is carried to a height of 55' and is discharged through a chute to a vibrating screen 4' by 12'. The crushed material which passes through the screen (under 1½") moves by chute to an inclined 30" troughed belt conveyor 60' long. The rejected pieces move by chute to reduction crushers which return the material to the bucket elevator.

### Blending and Stockpiling

The 60' crushed stone belt conveyor discharges to a set of vibrating screens which segregate the crushed material. From these it passes by chute to storage bins located below.

So far the operation has been followed from the quarry through processing to intermediate storage. There are seven intermediate storage hoppers located under the plant which receive the assorted sizes by chute directly from the barrel screen and vibrating screens. These hoppers have capacities of approximately 400 tons each, and hold the basic grades of sand and gravel.

The materials from these storage

# Crescent

ELECTRIC

# PALLETIER

REG. U. S. PAT. OFF.



bins must often be blended to meet customers' specifications. The blending is accomplished by means of a 36" x 400' belt conveyor located in a tunnel under the plant. Twenty 8" square gates in the bottom of these bins feed to the belt centered under them.

The sand, mentioned earlier, is stored in the yard in two stockpiles holding a total of 20,000 tons. The stockpiles are fed from the vibrating screens by two 24" troughed belt conveyors, the first 50' long discharging to the smaller pile. A turn-head on this line is used to discharge the material onto a second 24" troughed belt conveyor, 300' long, which feeds the larger stockpile.

A 24" troughed belt is located in a tunnel extension below the sand stockpiles. The 300' sand conveyor and the 400' mixing conveyor are located in a straight line. They discharge at a junction house onto the foot of a single 30" troughed carrying belt, 400' long, which travels south at right angles to the feeding belts. These move the mixed material to a height of 60', discharging onto a rewashing screen at the top of the batching building located southeast of the processing plant. In addition to the blending equipment, the batching building houses six storage bins, varying from 200 to 300-ton capacity for blended material and sand, which are used for truck loading purposes. An automatic weighing device releases the material in tonnage lots.

The batching unit contains four 400-ton capacity bins which hold the primary grades from which blends are mixed. A turn head at the top of the troughed belt conveyor entering the building is designed so that the rewashing screen can be by-passed to permit delivery of sand to an outside 60-ton capacity bin used for loading of gondolas on an adjacent siding south of the building. Gravel sent to the outside bin, however, passes over the re-wash screen. Two men are able to load from 25 to 30 cars per 9-hour shift, by means of gravity chute from the outside hopper.

#### Learning From Past Experience

Various grades of gravel are stored in a 3-acre area west of the processing building. This material is stockpiled by means of a tractor-

## Here's the 1/2 ton capacity unit of the BUDA MATERIAL HANDLING FLEET



BUDA Chores Boy Model B... 1/2 ton capacity, 3 wheels. Also available with dual rear wheels, 1-ton capacity. (Model HB)



BUDA Chores Boy Model FF... 1 ton capacity, heavier throughout, 60% more loading space, dual rear wheels.



BUDA Chores Boy Model B or HB, with special dump hopper for special materials. 1/2 or 1 ton capacity



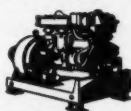
BUDA Chores Boy TRACTOR Model TR, for trailer hauling, same basic design—85% of parts interchangeable with other Chores Boy Models.



BUDA Chores Boy REFUELER, for aircraft servicing—carries and pumps 250 gals. of gasoline or lubricating oil.



BUDA Lifting Jacks. Wide range of sizes, in both hydraulic and mechanical models, capacities to 75 tons.



BUDA Diesel-Gasoline—Natural Gas—Butane—Propane Engines. Power Units from 5 to 340 H. P. Diesel-Electric Generator Sets from 2 1/2 to 125 K. W.

### the MODEL B Chores Boy

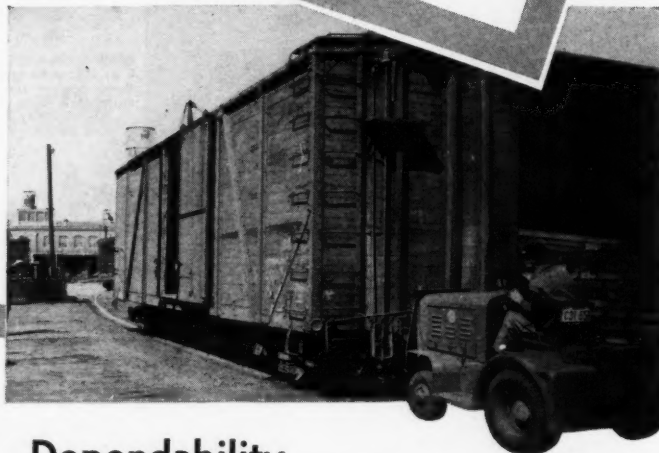
Looking for a smaller, compact material handling unit for loads up to 1000 pounds? Here it is... The BUDA Model B Chores Boy... gives you greater versatility at lowest operating and maintenance cost. Special features: Runs all day on a gallon of gas • Short turning radius... one-wheel steering • Simple, sturdy design • Extra safe... manual and automatic brakes • Powerful, 4-cycle air-cooled gasoline engine... speeds up to 15 m.p.h.

Write for Illustrated BUDA Chores Boy Bulletin

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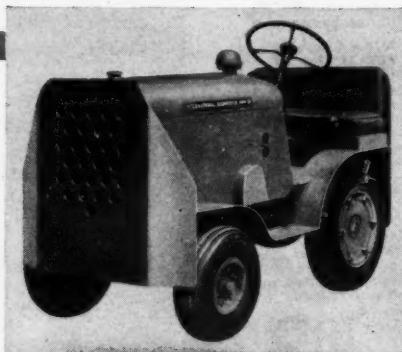
Standardization on International Harvester engines and replacement parts provides interstandardization between SHOP MULE models. Our users know that interchangeability of parts affords economical maintenance and availability of service means quicker repairs.

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INTERNATIONAL HARVESTER POWERED



Write for the SHOP MULE "Photo Folio" illustrating working views of all models including medium duty A14V shown above.

All SHOP MULES are Underwriters Laboratories Approved

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CREATORS AND MANUFACTURERS OF SHOP MULES SINCE 1918

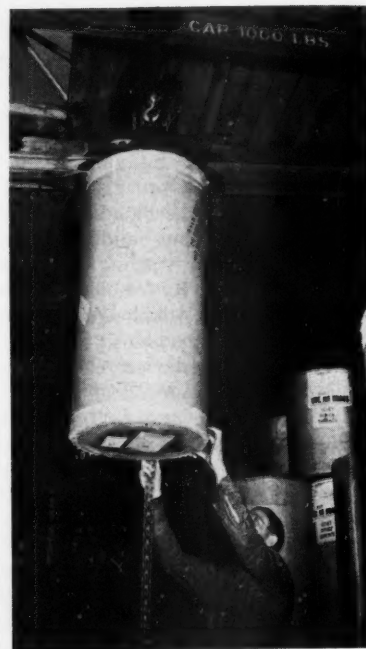
mounted crane using a  $\frac{3}{4}$  cu. yd. bucket. Two bucket loaders are used to transfer this material to outgoing trucks.

The American Aggregate operation, processing a material that is sharp and abrasive, finds it necessary to devote approximately two hours per day to maintenance. The belt conveyor equipment, however, requires the least attention. This, it is explained, is due to the fact that the lightest belt employed is of 6-ply rubber-canvas stock.

In addition to the daily maintenance check, the operation shuts down from December 25 through March 1. At this time, the plant is given a thorough overhaul. During this period modifications and addi-

## SAFETY - - CONVENIENCE

In this operation, a manually operated, trolley-mounted 1000-pound hoist and semi-automatic grab are pay-



ing their way at Spalding Moss Co., Boston, even though the handlings are infrequent. The rolls of paper used for making blue and ozalid prints are hoisted to the height necessary for convenient positioning in the storage area. This done, the hoist is overrun slightly and the grab removed without being touched by the operator. According to a Spalding Moss official, "The overhead handling devices are working very satisfactorily in moving the rolls weighing up to 350 pounds each, with great convenience to the operator and no damage to the rolls."—Courtesy, Mansaver Industries, Inc., New Haven, Conn.

tions are made to equipment where the experience of the previous quarrying season has shown it to be needed. This practice helps explain how operation is kept-up-to-the-minute—and why its per-ton handling costs are held to a minimum.

★ ★ ★

#### EXPOSITION ISSUE BRIEFS

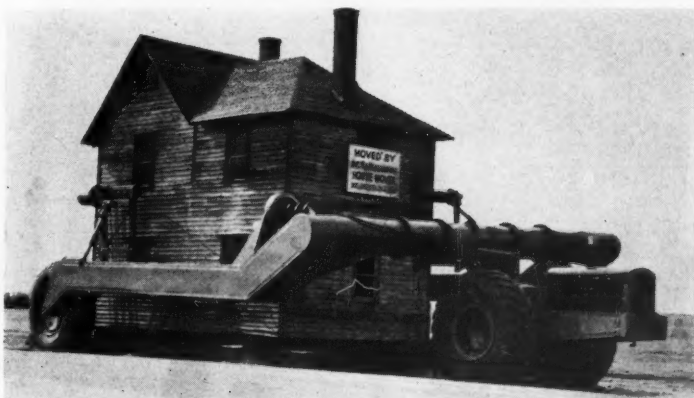
Weeks ago FLOW's editorial staff began working to realize the plan made some time earlier for a special Second Material Handling Issue in January.

The Show will be highlighted in a special feature, designed to give visitors all essential information about people, products and events in the form of a handy reference guide.

Articles of long-range interest, provocative and informative, will give readers reference material for future use, as well as data that can be applied to present operations. Equipment in a field closely related to material handling will be investigated and presented in a comprehensive report.

A series of special case studies is planned to cover a wide range of

*Because entire sections of cities must be relocated to make way for airport expansions and highway routes, this electrically operated house moving rig has been developed to speed the job. With the rig, the la-*



*borious practice of raising, jacking and blocking has been eliminated along with the usual rollers. The huge device, known as the Tournamover, simply moves in, picks up the frame supporting the house and moves off to the new location. It sets the house down on a previously prepared foundation.—Courtesy, R. G. LeTourneau, Inc., Longview, Tex.*

material handling facilities in a large group of industries. These will cover examples of effectively applied standard equipment, special adaptations of equipment to layouts which represent a wide-spread problem, as well as specially en-

gineered features doing an outstanding job in material handling systems. Throughout, attention is given to problems of human engineering, flow engineering and effective space utilization in relation to production.

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THE HUGHES-KEENAN COMPANY  
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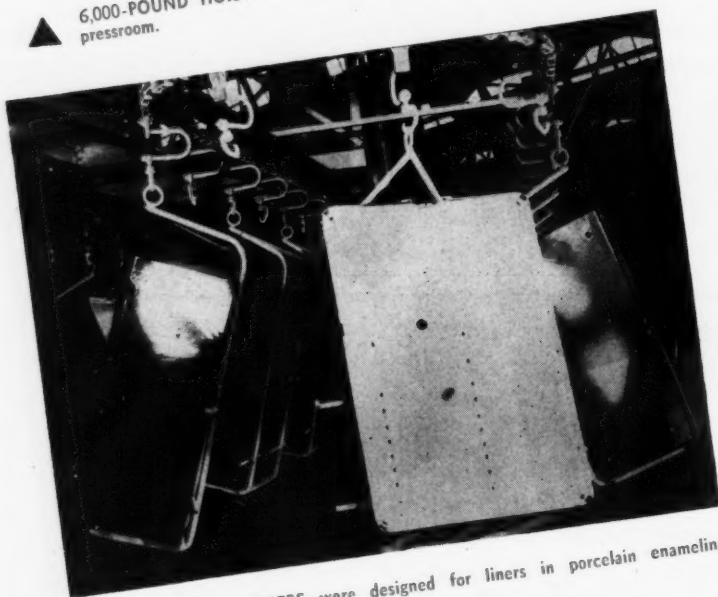
## Roustabout Cranes

By Hughes-Keenan

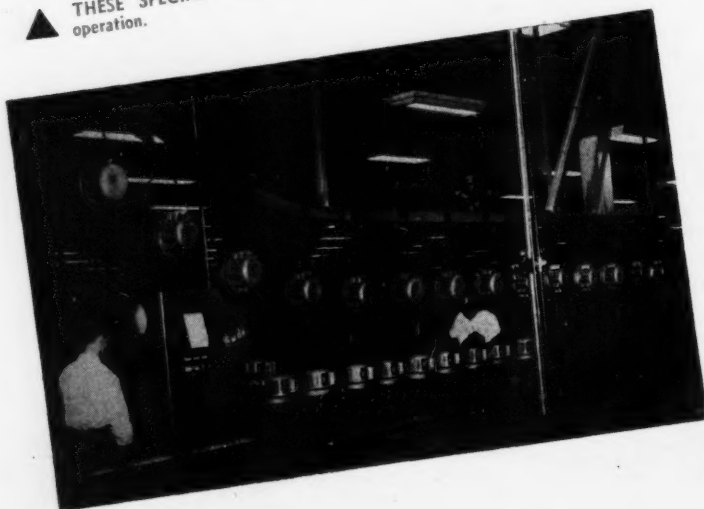
Load-Handling Specialists Since 1904



▲ 6,000-POUND HOIST WITH SHEET GRAB unloading stock for the storeroom, pressroom.



▲ THESE SPECIAL CARRIERS were designed for liners in porcelain enameling operation.



▲ ASSEMBLED ON ROLLER-RIDING PALLETS, these compressors units are sent on overhead.

# Many BUILT TO FINISHED PR

HOISTS, CHAIN AND  
GRAVITY CONVEYORS

*Advanced material handling facilities in this one of the newest of Philco's plants keep the products moving to the market.*

**E**VERYTHING'S on the move in Philco's new refrigerator and freezer plant in Philadelphia. A primary reason for this is the highly efficient system for moving materials is keeping parts being processed in motion and seeing that finished and crated assemblies move out in a well ordered and sizable stream.

As the layout in this plant is brand new and among the largest of its kind (if not actually the largest), no pains or justifiable expense have been spared to attain a high level of efficiency. This plant is thought to be the only one of comparable output that produces complete refrigerator and freezer cabinets as well as the compressor-evaporator-condenser units under one roof. Most other plants making refrigeration equipment for home use on a large scale have separate plants for cabinet, unit and assembly purposes, as Philco has also in other locations.

Although the plant itself is mod-



Lines

# THE PRODUCT

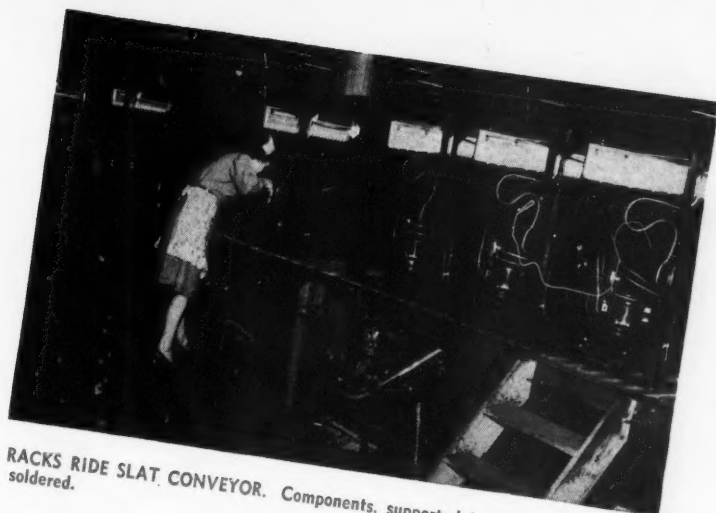
ern, it was formerly used for quite different manufacturing purposes. But it was stripped and completely re-equipped for the layout here described.

Actually, four levels are in use but two of the largest differ in level by only two feet and are virtually one floor. Several of the chain conveyors move from floor to floor via ramps constructed for this purpose alone. There are several elevators used chiefly for electric trucks and trailers carrying unfabricated materials and two lifts used exclusively to lower crated products from the end of final assembly conveyors to car loading platforms.

## Conveyors for Storage Purposes

Although some stockroom space and some temporary storage areas are provided for incoming stock and purchased components, conveyors are designed to carry a large proportion of the day-to-day inventory and to shift it as required for processing. One large section of chain conveyor equipped with trolley duct is provided to carry, for six hours, assembled units (that include compressor, evaporator and condenser with connecting tubing) as these units undergo a run-in test, conducted in an air-conditioned area.

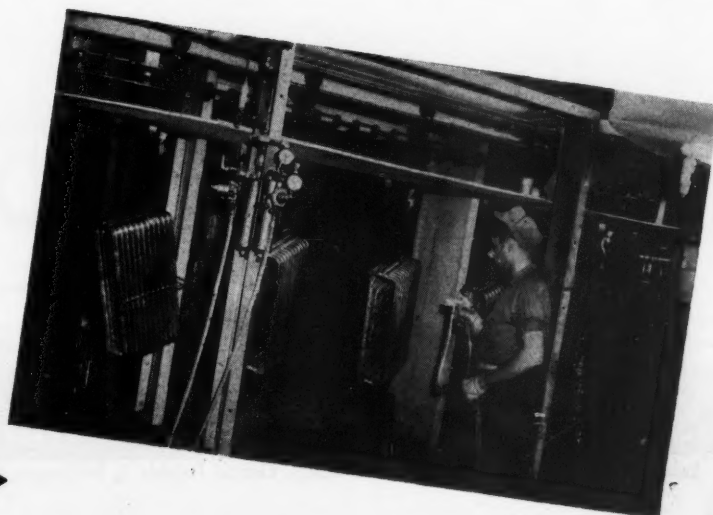
Besides the railway siding on the lowest level, used for both incoming material and outgoing products, there are two large truck docks



RACKS RIDE SLAT CONVEYOR. Components, supported in racks, are connected, soldered.



CONDENSORS ON TWO-LANE ROLLER CONVEYOR are delivered from brazing to plating, rear.



AFTER ASSEMBLY, processing, evaporators are carried on chain through spray booth.

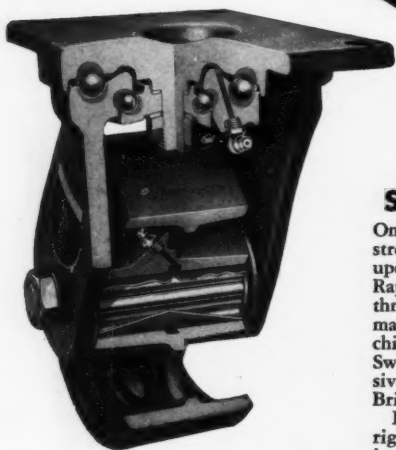
# More Productivity

## BEGINS WITH THE RIGHT HANDLING EQUIPMENT



### FLOOR TRUCKS

Modern floor trucks that meet today's requirements for greater efficiency in the handling of materials . . . easy on the man, the load and the floor. Durable, they retain that new, free-running action year in and year out. Two models and a variety of platform sizes to fit every need.



### STEEL-FORGED CASTERS

Only a forging possesses the high tensile strength required to meet the stresses placed upon truck casters by modern industry. Rapids-Standard casters are "Steel-Forged" throughout. . . . All parts are precision made units with all wearing parts fully machined and assembled to close tolerance. Swivel ball raceways hardened by the exclusive Flame-Hardening process to 500-550 Brinell.

Rapids-Standard casters are made in both rigid and swivel types with a choice of bearing depending upon the service for which they are intended. Wheel types include metal, Resinoid and Rubber. These casters wear better . . . longer. They are standard equipment on all Rapids-Standard floor trucks.

used for the same purposes though not always for the same items. At the sidings, heavy materials, especially sheet steel in bundles and strip stock in coils, are handled by a monorail hoist. This runs into the press shop (one floor above the siding) and through a storeroom for steel next to the press shop.

Trucks and trailers transport materials and parts to and from store-rooms, whether the materials arrive by truck or by railway. As far as feasible, materials are deposited where used or in adjacent temporary storage areas. Some local shifting for short distances is by hand lift trucks, often handling loaded skids.

Most routing of products in process is done by overhead chains except where, for short distances, slat or roller conveyors, belts or chutes are more convenient. All inter-department conveyor moves are by chain and there are five separate major chain conveyors, mostly for inter-department use, although these serve also for local use where convenient for this purpose. Besides the major chains, there are many of these same type on short circuits within departments. Many of these chains carry components through such processes as cleaning, rinsing, pickling, bonderizing, painting, enameling, drying and lacquering. In other cases, parts or assemblies in process are taken from chains for certain operations and are returned, for advance to another operation, in the same or another department.

Some of the largest chains confined to any one department are those used in the painting and the vitreous enameling departments. These chains run through chemical processing lines, such as those for cleaning, bonderizing and pickling. The paint conveyor runs through spray booths and then through drying ovens. That for vitreous enameling also passes through a drying oven, a spray booth, then through a furnace where the frits, previously applied, are fused to the steel, and finally along a cooling line before being unloaded and reloaded.

Despite the many chain conveyors in use and the moderate 14-ft. headroom, there is only one place in the plant where chain conveyors cross each other and there height is sufficient for ample separation. On

### WHEEL-EZY\* HAND TRUCKS

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Model CK-45-AGH



Model CK-145-D-GP

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FLOW

many of the shorter chains in particular, there are special racks made to accommodate the individual parts or assemblies being handled.

Most assembly work is done on slat, roller or belt conveyors though in some cases there are chains for advancing pallets on which assembly operations are performed. The largest slat conveyors are two, 400 ft. long, used for final assembly. These run in parallel lines some 40 ft. apart and have their top surface about a foot above the floor on which the lower rails rest. This keeps the work at convenient height for most assembly operations, but for others, too low for convenience of operators at floor level, there are pits that parallel the conveyor and enable the operators to work under or near the base of the assemblies and still remain in comfortable and efficient attitudes.

#### Flexible Routing, Positioning

Overhead chains paralleling and sometimes crossing the final assembly slat conveyors bring most components to the operators doing the final assembly but small parts are often placed in 5-gal. pails or other containers close at hand. Between the final assembly lines is an area for temporary storage of banks of parts or subassemblies unloaded from chains. One such area stores the compressor-evaporator-condenser subassembly which has been built up on a "backbone" or supporting frame.

These frames are set temporarily on special light caster trucks at such height that the frame and contents are easily slid into place in the cabinet on the slat conveyor, after which the "backbone" is removed while the elements it has supported are fastened to the cabinet. A chain that dips where the "backbone" comes free carries it back to receive another built up unit.

Near the end of the final assembly, the slat conveyor runs through an infra-red lamp tunnel to dry any touch-up painting needed. After final inspection, crating is done on the conveyor and crates are run off onto roller conveyor sections that carry the crated products to lifts, holding one crate each. As each crate enters the lift, the crate is locked in place automatically and the lift then drops to the siding

# CLARK

## "CLARK TRUCTRACTOR Stole the Show!"

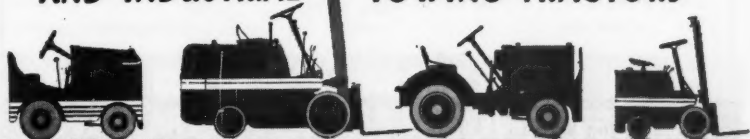
That was the consensus of visitors to the First National Materials Handling Exposition.

You can count on Clark Tructractor to "steal the show" again at the second Exposition in Cleveland, January 12 through 16, 1948, with a display of sound and practical new handling ideas: Fork-Lift Trucks, Towing Tractors and attachments — products incorporating Clark's traditional quality and unrivaled experience.

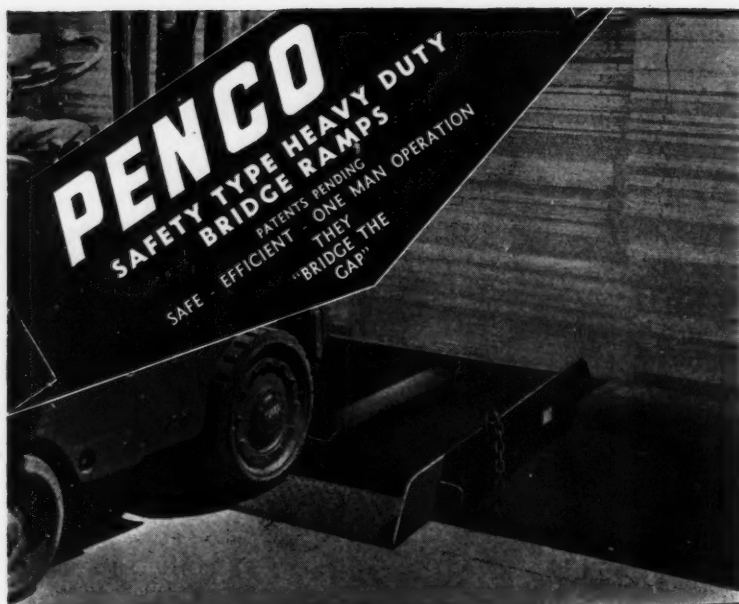
If movement of materials enters into any phase of your operations, a visit to Clark's exhibit is a MUST. Booths—407-8-9 and 419-20-21.



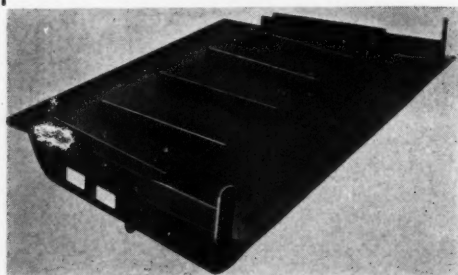
## CLARK GAS OR ELECTRIC POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS



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REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD



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A PENCO heavy duty safety type bridge ramp is the perfect answer to your problem. Fullest satisfaction assured.



One man operation. Photo shows lifting chains being inserted in locking slots.

Write for Bulletin 470 giving full details.

**PALLET ENGINEERING COMPANY**

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platform where the crate is removed for shipment.

As there are two final assembly lines, they are arranged for two different models of refrigerators or one for refrigerators and one for freezer chests, depending upon the schedule of shipment at a given time. Other departments are set up, of course, to supply the components needed on the final line.

Another sizable but smaller slat conveyor set at bench height is employed for soldering operations on the tubing that connects the compressor, condenser and evaporator assembled in the "backbone" frame. These units are fed off the slat conveyor onto a roller conveyor along which the units go to "dunking" stations.

There, air lifts lower the assemblies into tanks of water for pressure test. Any assemblies that show leaks have these repaired on a roller conveyor loop and are fed back for retest. After passing this test, the roller conveyor carries the units to an adjacent department for dehydration.

For this operation, the units are shifted by hand into special double-deck caster trucks holding 20 units each. When filled, these trucks are wheeled into dehydration ovens. Later the trucks are rolled out and the units, after cooling, are shifted onto a chain which carries them through charging stations.

#### Carriers Designed for Efficiency

From the last mentioned conveyor, units are shifted to the cold test chain which has carriers to take two units each, one above the other. Chain hooks supporting the carriers straddle a trolley duct and each carrier has connections for plugging in the wire leading to the compressor of each unit carried. This makes it possible for the units to be operated and run in for six hours while being advanced on the conveyor and checked for performance. At the end of this chain, units are shifted to another chain which carries them to the final assembly line.

There are two bar conveyors in the department (on a low level) where evaporators and condensers are assembled and finished. One bar conveyor runs through an oven next to which condensers are lacquer dipped and then are dried



after draining. The other bar conveyor is used to advance assembled evaporators through a galvanizing line on which the parts are cleaned, pickled, dipped in flux and then are dipped in a galvanizing bath of molten zinc. At the end of this line, the assemblies go on a chain for bonderizing and painting.

In the evaporator assembly, a belt conveyor at bench height is employed to advance the evaporators while tubing joints are being soldered. This conveyor feeds to the second bar conveyor mentioned above.

There are also in this department roller conveyors that carry parts into, through and out of brazing furnaces, some of the conveyors being gravity types and some having chain driven rollers. A plating conveyor on which condensers are processed through cleaning and plating baths is provided with hooks advanced by a horizontal chain.

#### A Device for Every Purpose

Assembly of fins onto condenser tubes is done in wheeled fixtures arranged on tracks with transfer carriages at each end. Fins, stamped to shape, are fed down a chute and are loaded into fixtures resting on one pair of rails. After filling, the fixtures are transferred by one carriage to the second set of rails and pass through a press where fins are pressed home. Then the assembly is unloaded and the fixture is shifted by another carriage back onto the first set of rails for reloading. With this arrangement five fixtures are kept moving around the oblong conveyor.

In the machine shop, where compressor parts are machined, castings and other stock are delivered by truck in tote boxes or bundles and deposited near the first machine of each group. Thereafter, parts are advanced from machine to machine along chutes or roller conveyors until machining and inspection are completed. Then the finished parts, set in trays, are transferred by conveyor to an assembly department.

Scrap, chiefly flash from stampings and chips from machining, are collected by truck and trailer units which transport them to a collection point where the scrap is fed down a chute over the siding into cars for return to steel mills.



**This is a Job for a Hoist!**

Don't let yesterday's handling methods set tomorrow's production pace. Use Robbins & Myers electric hoists to gear materials movement in step with *high speed* schedules. From dock to storage to production to shipping, these sturdy "lifts" keep materials flow on time ... boost output per man-hour ... cut production costs.

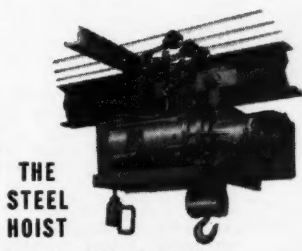
#### THE HOISTS YOU CAN DEPEND UPON

R & M's use long-lived Robbins & Myers motors for rugged power with ample reserve—have the *endurance* and *reliability* that mean freedom from maintenance. Easy to install—easy to use. Low headroom. Oversize automatic brakes that hold without "drift." R & M's take capacity loads in stride year after year.

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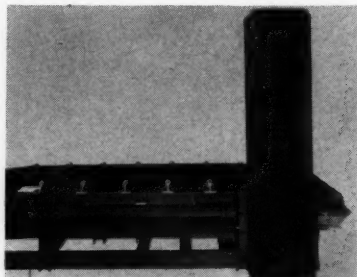


For additional information on these products, write Dept. 5, Flow Magazine, 1240 Ontario St., Cleveland 13.

#### CONVEYOR SCALE

**NP166**—A new development in the continuous weighing of dry materials on conveyer belts is offered in the Conveyoflo Meter, by Builders-Providence, Inc. The producer states the meter utilizes diaphragms for weighing and is designed especially for industrial processes which involve weighing of coal, gravel, stone, powdered chemicals, newly mined or crushed ore, stemmed tobacco leaf, fruit, wood chips, and sewage sludge.

It is claimed that the scales may be used to proportion and control,



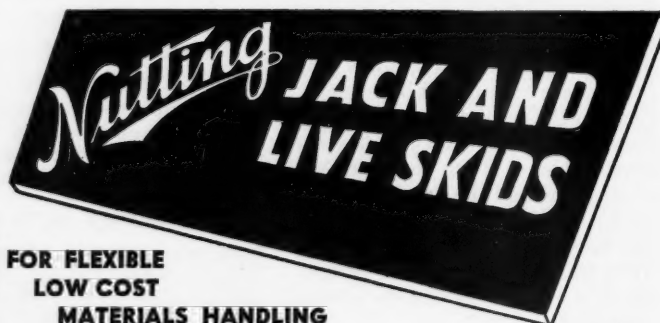
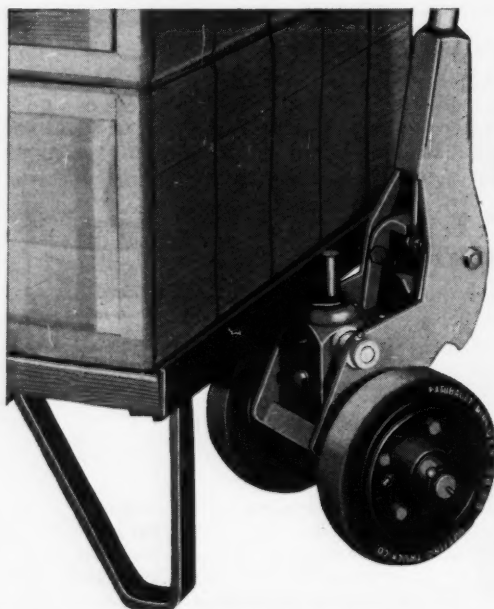
as well as weigh, the feed of one or more dry materials such as cement, sand and gravel, ground rubber for reclaiming purposes, batching wood

chips to digesters, controlling ore to ball mines, and to control the flow of liquids in proportion to the flow of dry materials. The weighing section, according to Builders-Providence, is supported at one end by self aligning ball bearing pillow blocks, and the other end "floats" on a diaphragm which transmits load changes hydraulically to the weighing mechanism.

#### LIGHT FORK TRUCK

**NP167**—The light-weight Trans-tier, according to the Trans-tier Truck Co., has been designed for smaller plants which cannot use heavy equipment. It is reported that the half-ton and one-ton capacity models weigh approximately 2200 and 2800 pounds respectively, and both models are offered in two mast heights: five-foot lift with collapsed height of 48 inches, and nine-foot lift and collapsed height of 78 inches.

The manufacturer states the vehicle is powered by a Crosley Cobra engine weighing 59 pounds and developing 26.5 horsepower. Pneumatic tires allow it to operate



#### FOR FLEXIBLE LOW COST MATERIALS HANDLING

Only the Nutting Jack is operated by gravity and leverage—no springs to break!—no danger of your jack-skid system suddenly bogging down. The Nutting Jack is unique in its simple, rugged construction, and has many other advantages: complete control of load at all times, easy swiveling under full load, extreme range of tongue positions for short turns, extra high lift for steep ramps or high thresholds without striking skid legs.

Nutting Live Skids are sturdily built to Nutting standards of quality. They take the grief-year after year! A large range of standard platform sizes, with super-structures available if desired. The Nutting Jack-Skid System is outstanding—investigate!—compare!

Nutting Makes Everything in FLOOR TRUCKS, WHEELS, CASTERS. Look in your classified phone directory for your nearest Nutting representative, or write for Bulletin 47-G direct to

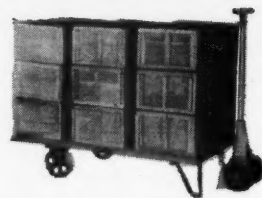


FIG. 421, Standard Industrial Skid, 9 platform sizes from 24" x 48" to 42" x 72." Capacity 1800 lbs. Metal or Rubber Tired Wheels.



FIG. 420, Heavy Duty Industrial Skid, 9 platform sizes as above. Welded angle steel frame. Capacity 2800 lbs. Metal or Rubber Tired Wheels.

**THE ONLY MECHANICAL JACK  
WITH NO SPRINGS**



**NUTTING TRUCK  
and CASTER COMPANY**

1601 DIVISION STREET, FARIBAULT, MINNESOTA

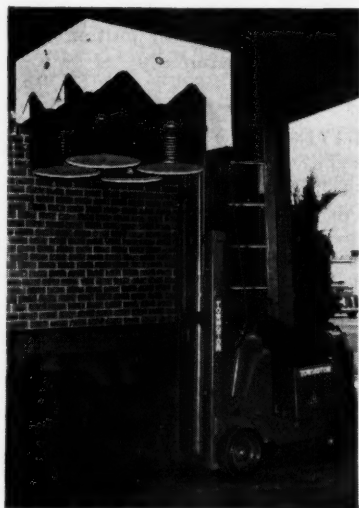
inside truck vans, on elevators, upper floors, and over relatively



soft and uneven surfaces, it is claimed.

#### DRUM CARRIER

**NP168**—Pallet Engineering Co. has been appointed exclusive distributor for Tray-Hart Multiple Drum Carriers, it was announced. The device is constructed of high-tensile steel and is designed to carry from one to four drums at a time. The drums are secured by self-cen-



tering shoe pressure while a side shifter allows a movement of five inches to either side of center. In addition, the device can handle drums with a diameter variance of six inches. The drum carrier can be attached or removed from a lift truck in 10 minutes, it is claimed.

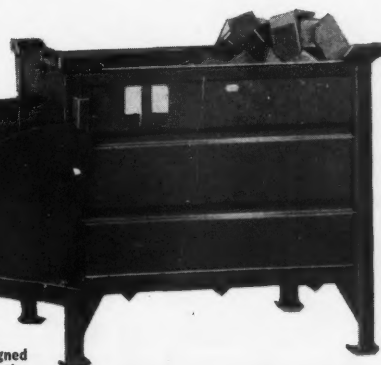
#### WIDE BELT CUTTER

**NP169**—Flexible Steel Lacing Co. has announced a new type belt cutter for use on belts up to 60 inches wide and 1-1/8 inches thick. It is made up of two elements—the head that carries the blade and a

# BRUSCO LABOR SAVING MATERIAL HANDLING EQUIPMENT



## DROP DOOR PARTS BOX



There are Brusco heavy parts boxes designed to fill any need. Many customers find the Brusco Drop Door Box just the answer to their material handling problem.



Brusco Boxes are fabricated from heavy gauge steel sheets, corrugated for extra strength and reinforced with heavy steel angles. Legs have skid plates for easy moving. Standard sizes:

24 x 24—26 1/2 x 36  
36 x 42—30 x 48  
36 x 48—36 x 60  
Depth 18", 24" or 30"

Boxes equipped with card holders for stock records.

Orders or inquiries should specify quantity, width, length and depth of box desired. Also state underclearance required and estimated weight of load. We are able to fulfill any special requirements.

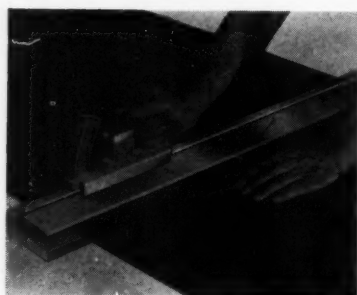
SEE OUR BOOTH 436 AT THE CLEVELAND EXPOSITION.

# BRUMMELER STEEL PRODUCTS CORPORATION

DEPT. 25 GRAND RAPIDS, MICH.



T-shaped base or guide rail. The blade consists of a long, thin narrow strip of steel sharpened in a V

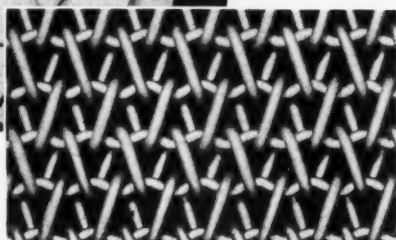
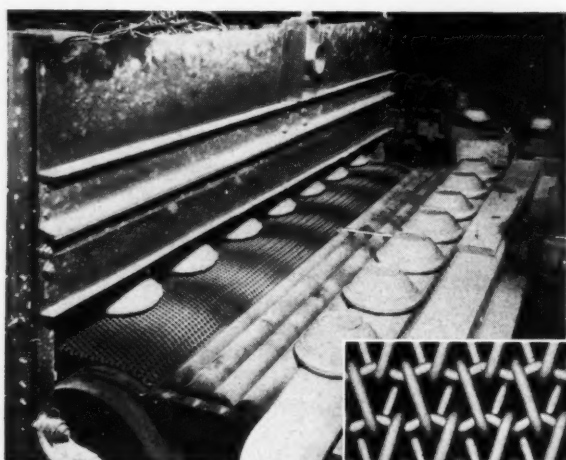


shape. It is held in a slot in a vertical position in the head and adjustment is accomplished by means of a screw. In use, the base is nailed to the belt and cutter pushed across the belt. The base comes in four widths, from 24 inches to 60 inches, and is four inches longer than the width of belt it is designed to cut.

#### ROTATING ROLL DEVICE

**NP170**—An attachment for paper rolls for its hydraulically operating rotating carriage has been recently

added by Lewis-Shepard Products, Inc., to its line of special devices for power fork trucks. It can be used on Lewis-Shepard electric,



**Pottery processes speeded up . . . costs slashed through**

#### INFRA-RED DRYING on **CAMBRIDGE** Balanced Belting

The right combination for more efficient, more economical production of pottery is Infra-Red drying on Cambridge Balanced Belting! Ideally suited for this high temperature drying operation because of its low thermal capacity—this flexible, open-mesh belting (see close-up insert) is available in various alloys to withstand temperatures up to 2050 degrees Fahrenheit. As in the Infra-Red pottery drying operation illustrated, production is speeded up . . . quality is improved . . . operating and heating costs are slashed with Cambridge Balanced Belting as the conveyor medium. You're wise to find out specifically how it can help you save time and money in all pottery processes. Write Dept. 20 for details.

**FREE**

... This illustrated technical handbook is a complete, practical reference for all belt users. Write Dept. 20 for your copy.



**CAMBRIDGE WIRE CLOTH CO.**  
CAMBRIDGE, MARYLAND

Boston • New York • Baltimore • Pittsburgh • Detroit • Chicago • St. Louis

gasoline or gas-electric models, according to the report.

The paper roll attachment requiring 90 degrees of full rotation, consists of a full curved backplate to fit the contour of the roll and a polished and ground toe plate with beveled leading edge for entering under the headings of paper rolls without inflicting damage, the announcement stated. Rolls may be picked up in a vertical position and deposited horizontally or vice versa.

#### BUCKET ELEVATOR

**NP171**—A new unit manufactured by Trowbridge Conveyor Co. is a belt bucket elevator which is said to permit portable handling of loose



material at a steep incline. The manufacturer claims a maximum elevation of 11 feet and minimum



elevation of seven feet six inches are possible with the unit measuring 12 feet 11 inches in length. The standard unit has a belt 10 inches wide with buckets 10 inches wide by five inches high, spaced 12 inches apart. It is also reported that the unit is equipped with a raising and lowering device and is designed for pivoting within a small area. Driven by an electric motor, the unit can be furnished with belt speed of 100 to 250 feet per minute, as required.

#### LOW-SEAM MINE TRACTOR

**NP172**—A mine tractor for operation in coal seams as low as 30 inches has been announced by Baker Industrial Truck Division of



The Baker-Raulang Co. The company states the tractor has U. S. Bureau of Mines approval and is designed so that the operator may work from either a sitting or reclining position to permit operation under limited headroom. The tractor, according to the manufacturer, can operate without restrictions of trackage in drawing a train of trailers full of coal. Pneumatic tires enable it to operate directly in the mine floor and have been found useful, it was reported, in trackless mining systems.

#### HAND TRUCK

**NP173**—An all-welded hand truck, featuring a patented "pry bar" designed to simplify the lifting and



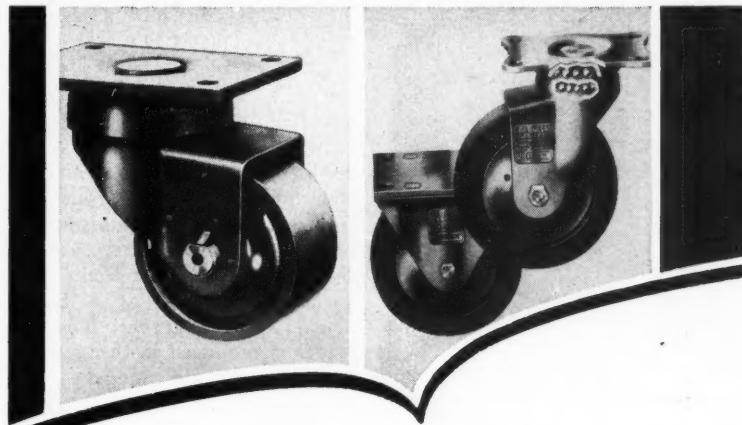
moving of crates, has been announced by Whiting Engineering & Manufacturing Co. Marketed as

the "Whiting Wheeler", the one-man operated vehicle weighs 60 pounds and is constructed primarily of steel tubing. Roller-bearing wheels of small diameter are used on the front, casters at the rear.

In operation, the "pry bar" slips under the crate and is used to elevate the load while the truck is pushed under it with a quick thrust. The model shown is rated at 600-pounds capacity but models handling up to 1200 pounds are available.

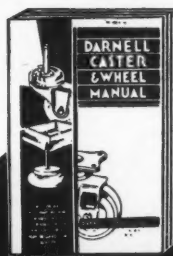
#### LIGHT DUTY CONVEYOR

**NP174**—Island Equipment Corp. has placed on the market a new Light Duty Conveyor Table and Overhead Empty Carton Conveyor, made in two types—roller and slide bed. The equipment consists of pressed steel channel frames in 10-foot sections, supported either by fixed adjustable floor supports or by ceiling hangers. The bed is made up of 1-3/8 inch rollers on eight-inch centers or steel slide bed in 12-inch, 18-inch and 24-inch belt



# DARNELL CASTERS

*Yours  
for the Asking...*



**FREE  
Manual**

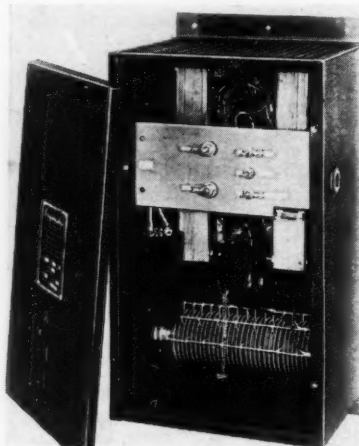
DARNELL CORP LTD  
LONG BEACH 4 CALIFORNIA

60 WALKER ST. NEW YORK 13 N.Y.  
36 N. CLINTON CHICAGO 6 ILL.

widths. A three-ply cotton belt is employed and it can be set high, flush or low. Speed is fixed or variable. The unit is also supplied with side leaves on one or both sides of the belt conveyor, where operators can carry on any work to be done.

#### VOLTAGE REGULATOR

**NP175**—A selenium rectifier that is said to maintain constant voltage



despite changing amounts of current drawn from it has been placed

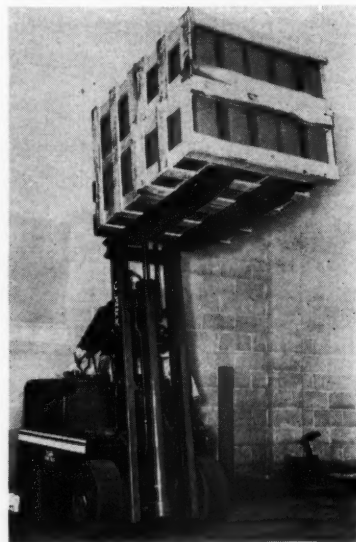
on the market by LaMarche Manufacturing Co. It is constructed to handle low voltage direct current magnets in varying loads from zero to 20 amperes, with no appreciable variance in voltage. The unit requires about a cubic foot of space.

#### CAR LOADING TRUCK

**NP176**—A new fork truck, the Carloader, has been announced by Clark Tractor Division of Clark Equipment Co. The model is said to provide for high tiering with low uprights. According to the announcement, it stands 83 inches with forks lowered and has a maximum lift of 120 inches.

A new type hydraulic system is used which has the valve mounted directly on the sump. Improvements to the power system are listed as including a mechanical governor to maintain proper uniform speed, a water pump for correct constant temperature, exhaust through the counterweight in a horizontal position at a 15-inch height, and air cleaner. The Carloader is produced in three capacities in gasoline models—3000 pounds at 15 inches; 4000 pounds

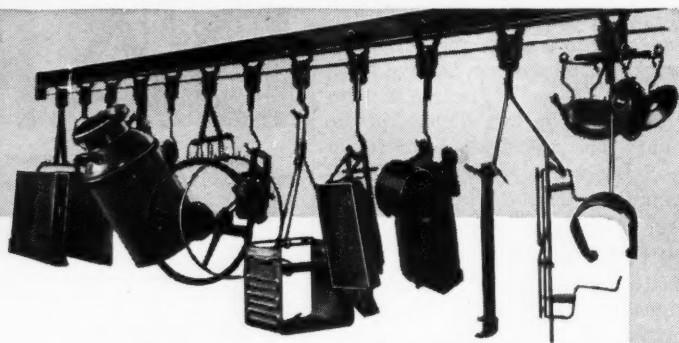
at 15 inches, and 4000 pounds at 24 inches, or 5000 pounds at 16 inches. In all battery-operated models, there are counterparts with the exception of the 3000-pound



capacity truck. Standard lift is 120 inches for all models. A low-lift type of 72 inches and an extra high lift model of 144 inches are also available.

**Hang it all...**  
on  
**BUSCHMAN  
UNIVERSAL  
CONVEYORS**

*Buschman  
Better  
Built*



● Tried, tested and proved . . . accepted as standard by many of the nation's largest manufacturers! Illustration shows a diversified group of the many products for which Buschman Trolley Conveyors have been designed.

● Buschman "Universal" Overhead Trolley Conveyor is the answer to your light conveyor needs. Furnished with either transmission chain or steel cable to operate in level horizontal plane or with up and down dips as required. Easily installed in the field, using standard, bolted sections. All the features of heavier, more costly conveyors.

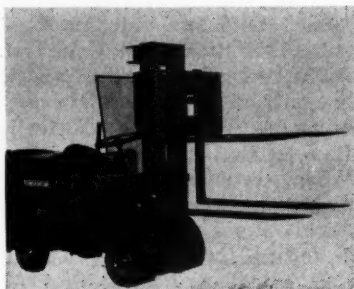
For complete details, write for Bulletin 40.  
**THE E. W. BUSCHMAN COMPANY, INC.**  
Winton Place, Cincinnati 32, Ohio

You are cordially invited to visit the Buschman booth Number 403 at the 2nd National Materials Handling Exposition in Cleveland, January 12-15th, 1948.

**Buschman**  
REPRESENTATIVES IN PRINCIPAL CITIES

## HEAT TREAT FORK TRUCK

NP177—Towmotor Corp. announces special equipment for its Model LT-56 fork lift truck for use in charging heat treat ovens with castings. Included is a heat-resistant glass shield, double set of forks

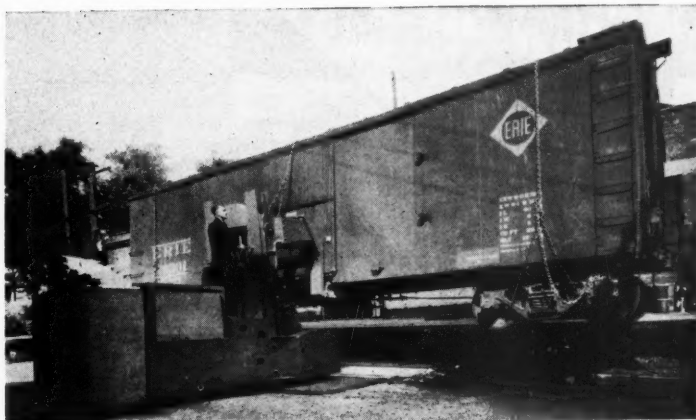


and a pair of tire guards. The shield attachment is approximately 40 inches square and has blue-colored glass to protect the operator's eyes from the glare and heat of the furnace. The tire guards extend over the front wheels for protection against heat. The dual forks, the second set spaced 25 inches above the level of the regular forks, enable the operator to pick up two

separate containers simultaneously and place them on shelves provided in each furnace. The forks are de-

## GIANT OF ITS FAMILY

*Believed to be the largest in the world, this giant fork and ram truck demonstrated its strength by lifting a 45,000-pound box during a special exhibition at the Automatic Transportation Co. plant in Chicago. Designed*



*for steel mill operations and other materials handling services involving extremely heavy loads, the model is one of the first two off the production line. The model shown is actually rated as a 30,000-pound capacity unit, according to plant executives. With the load center 61 inches from the heel of the forks when the 122-inches wide car was raised, engineers estimated that the actual load lifted was approximately 46,000 pounds.*

signed for single or dual operation. When used separately, one set of forks rises 25 inches before the second set starts to rise.

## INDUSTRIAL TRUCKING FLOORS

Resurfaced to withstand any traffic...



**\$15.00**

per unit

Consists of:  
4—50 lb. Bags Powder  
5 Gals. Floorcrete Liquid

Coverage:  
100 sq. ft. about 1/4" thick

## with CAMP'S No. 7 INDUSTRIAL FLOOR RESURFACER

Tougher than Steel—Easy to Apply

**COSTS ONLY \$15.00  
PER 100 SQUARE FEET**

Camp's No. 7 is applied like cement over your present wood or concrete floors. A 1/4 inch thickness resurfaces worn or rough concrete floors to withstand any traffic. Sets in three or four hours—ready for heavy trucking in 24 to 48 hours. Camp's No. 7 comes ready to mix—nothing else needed. Your choice of brown, red and natural dark gray.

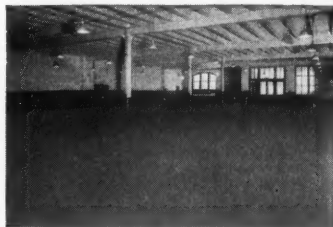
Order a trial unit—you must agree it is the best resurfacer you have seen, or there will be no charge.

**EVERY INSTALLATION UNCONDITIONALLY GUARANTEED**

Further information describing this and other Camp's flooring material sent on request.



Typical of Camp jobs is the recent application of almost 300,000 square feet of NO. 7 in a Marshall Field & Co. warehouse in Chicago. Users of Camp Flooring Materials include Illinois Bell Telephone, U. S. Rubber, Sears, Roebuck & Co., Carnegie-Illinois Steel, General Motors, American Can, etc.



Although NO. 7 is perfect for 90 per cent of all industrial needs, over 15 other Camp Flooring Materials enable us to meet even highly specialized specifications. Whatever your problem, we are ready to advise and assist. Write today. No obligation.

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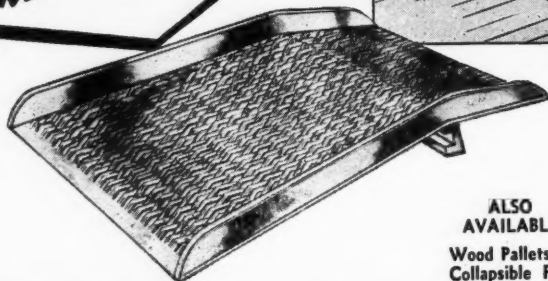
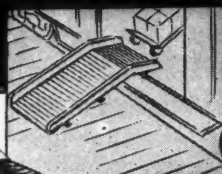
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**EXTRA LIGHT!  
EXTRA TOUGH!  
EXTRA STRONG!**

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DOCKBOARDS**



Eliminate accident losses and save manpower with this lightweight magnesium dockboard. Designed and specially constructed for extra safety and extra utility . . . non-skid . . . non sparkling metal . . . channel safety stringers . . . beveled trailing edges . . . one man can lift a unit . . . with 8,000 pound axle load capacity. Over 500 standard sizes and many other specially constructed units for individual applications.

Write today for price and delivery information.

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Wood Pallets  
Collapsible Pal-  
let Box  
Drop Bottom  
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Lightweight all-  
steel 8-way  
Pallets



**PALLET SYSTEMS, Inc.**

120 GUARDIAN BLDG.

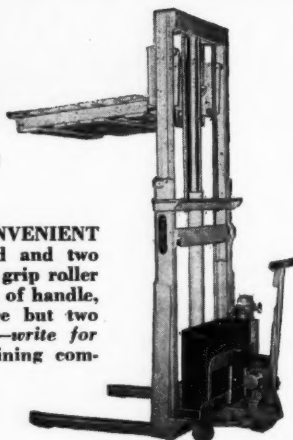
CLEVELAND 14, OHIO

# MOTO-TRUC

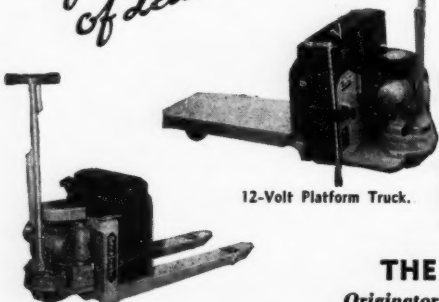
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**HAND LIFT TRUCKS**

**SIMPLEST, EASIEST, MOST CONVENIENT CONTROL.** Two speeds forward and two reverse by a twist of the on easy grip roller type handle. Push buttons in ends of handle, control hydraulic lift. These are but two of the many exclusive features—write for 8-page Bulletin No. 47-A, containing complete details.

*Compare  
for Proof  
of Leadership*



12-Volt Telescopic Hi-Lift Truck.



12-Volt Platform Truck.



12-Volt Pallet Truck.

**See the "SILVER QUEEN"  
the MYSTERY TRUCK**  
**at NATIONAL  
MATERIALS HANDLING  
EXPOSITION, Booth 318  
CLEVELAND, JAN. 12 to 16.**

**THE MOTO-TRUC CO.**

Originators of Motorized Hand Lift Trucks  
1953 E. 59th St., CLEVELAND 3, OHIO

## MATERIAL HANDLING

. . Institute Chapter . .  
**Activities**

**BOSTON**—At a meeting held October 17 several committees were formed, as follows. Advisory Committee: E. Richardson, Gen. Traffic Mgr. Lever Brothers, Boston; D. Finch, Supvr. of Frt. Handling Methods, N. Y. N. H. & H. R. R., Boston; C. Grimley, Gen. Mgr., Wiggins Terminal, New Haven; E. J. Murphy, Gen. Supt., First National Stores, Somerville, Mass.; Norman L. Cahners, Modern Materials Handling, Boston; Prof. W. Van Allen Clark, Ind. Eng. Dept., M. I. T.; L. Nivling, Gen. Sales Mgr., Lewis-Shepard Co., Watertown, Mass.; J. Welch, H. P. Welch Co., Somerville, Mass.; Walter Metcalf, Dir. of Operations, Stop and Shop, Boston; A. S. Harvey, Sales Mgr., H. G. Davis Co., Boston; C. Haddrell, Yale & Towne Co., Boston.

Nominating Committee: D. Finch, Prof. W. Van Allen Clark, C. Haddrell. Membership Committee: Norman Cahners. Activities Committee: W. Metcalf, R. Mount, Adv. Mgr., Bassick Co., C. Haddrell.

The next meeting was scheduled for November 24, with P. Startzman, of Drake, Startzman, Sheahan, Barclay, Inc., as the speaker. Subject: Savings obtained in specific material handling operations.

★ ★ ★

**NORTHEASTERN OHIO**—The next meeting of the Northeastern Ohio Chapters has been set for December 18, with a dinner at 6 P.M. in the Allerton Hotel, according to R. M. Slife, secretary. Harry W. Carpenter, technical editor of FLOW, will give an illustrated talk on "Industrial Plant Handling", beginning at 7 P.M. Reservations should be made by calling the secretary at Nook & O'Neill, Inc. Prospective members are invited to attend. Persons unable to attend the dinner may come for the program.

Northeastern Ohio Chapter of the Material Handling Institute held a membership meeting on Oc-



tober 23 at the Cleveland Engineering Society. This chapter includes the area within a radius of 100 miles of Cleveland. Meetings will be held at 6:00 p.m. on the third Thursday of each month at the Allerton Hotel, Cleveland. Applications for membership are available and may be obtained by writing Dwight Filkins, 1215 Swetland Building, Cleveland 15, Ohio.

**N**EWs of your chapter's activities coming events and special notices will reach all of the persons interested in them when they are published in FLOW. Secretaries of all groups are urged to send these notices promptly to assure publication in this space, another regular feature designed to serve the readers of FLOW.

★ ★ ★

**F**LOW'S January issue will be filled with reports, features and other data of interest to all persons who will attend the Second National Materials Handling Exposition in Cleveland, January 12 to 16, inclusive.

## Sterling Pallets

LIVE UP TO  
THEIR NAME

### 1. Seasoned Hardwood

Long life  
Low maintenance cost  
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### 2. Uniform Quality

Made in our own plant  
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Our big volume of repeat orders tells the story. Call Pallet Division.

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- ★ 250-, 500- and 1000-lb. Capacities.
- ★ Hook, Bolt or Trolley Suspension.
- ★ Positive Electric Brake. Enclosed Limit Switch.
- ★ Push Button Controlled, for Safe, One-Hand Operation.



### TODAY'S TOP VALUE IN HOISTS



Sturdy cast iron double drums balance load, eliminate overlapping cable. Simple, rugged construction employs only two gear reductions—one worm gear and one spur gear. Worm is of high quality steel forging, hardened and ground, operates on Timken radial thrust bearings. Best grade chilled phosphor bronze used for worm gear. Spur gears machined from forged steel blanks with full depth teeth. All gear shafts operate on ball bearings, fully enclosed, in a bath of oil.

The CONCO TORPEDO ELECTRIC HOIST is fast, compact, powerful, easy-to-operate. Double drum construction centers and balances load, assuring an even lift, freedom from sway, greater safety and efficiency for the operator. Write today for detailed specifications and prices. Prompt delivery.

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WHEELS: Metal - Rubber - Pneumatic



### SPECIALS OUR SPECIALTY



We take pride in our product and guarantee satisfactory performance and sturdy, long time operation under the most severe use. Agencies in most principal cities. Catalog gladly furnished upon request. Repeat orders testify to the efficiency of our trucks.

MAIN OFFICE AND FACTORY  
**ORANGEVILLE MFG. CO.**

"Established 1879"

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**over 90%**  
**OF YOUR**  
**MATERIAL HANDLING**  
**REQUIREMENTS**

— can be met with  
**STANDARD EUCLID CRANES,**

whether they are put to Special or General Purpose use. Standard Euclid Cranes are available in capacities of 3, 5, 7-1/2, 10, 15, 20 and 25 tons in various spans.

All detail parts are standardized and jig machined to assure interchangeability.

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High grade, wide face, coarse pitch gearing.

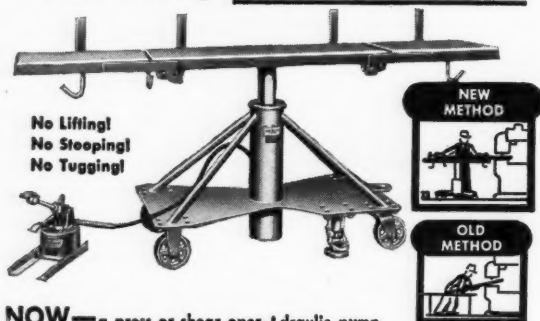
Shafts short and heavy to withstand stress.

Anti-friction bearings throughout.



## **SAVE HANDLING**

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No Lifting!  
No Stooping!  
No Tugging!

**NOW**—a press or shear operator can keep a diminishing stack of material constantly at the perfect feeding level.

✓ No need to lift, or stoop, or tug, or haul. He just slides each sheet or strip into position easily, quickly, safely.

✓ Doesn't have to leave his position! A pedal-operated hydraulic pump

— located wherever convenient to the operator — elevates the table as the feeding operation requires.

✓ Models of 2,000, 4,000, 6,000 and 10,000 lb. capacities, non-tilting (for horizontal bed presses) or adjustable tilting top (for inclined presses). Various standard size table tops.

EXHIBITING AT MATERIALS HANDLING EXPOSITION

➔ **WRITE**—Here's money-saving information on this shop-proved LYON-Raymond sheet feeding table. Folder sent free, without obligation, on your request.

**LYON-Raymond Corporation**

651 Madison St.

Greene, N. Y.

## **Meetings of Material Handling Groups**

Material Handling Association of Southern California: "Modern Material Handling Trends" was the subject of the afternoon session, October 30, during the two-day First Annual Scientific Packaging



and Materials Handling Exposition held in Los Angeles. Speakers for this forum were provided by the Material Handling Association of Southern California.

Subjects discussed and members of the panel were: Hand Trucks and Casters by Otto Holler, Faultless Caster Corp.; Cranes, Hoists and Monorails by A. Mazzola, Angelus Engineering Corp.; Conveyors by V. J. Pence, Mailer-Searles, Inc.; Industrial Power Trucks by Robert H. Braun, Robert H. Braun Co. Glenn A. Harshbarger, Frank E. Witte Co., president of the Association acted as Chairman of the Forum.

The Material Handling Society of Pittsburgh held its first meeting of the new season at the Roosevelt Hotel, October 20. New officers elected were: D. Hendryx, Harbison-Walker Co., president; R. W. Mallick, Westinghouse Electric Corp., vice president. The meeting was keynoted with a discussion of engineering curricula relative to plant layout and material handling. Prof. Walter R. Turkes, head of the Industrial Engineering Dept., University of Pittsburgh, was the guest speaker. Following his talk, the meeting was turned into a forum. The new program of the society calls for six meetings each season, from October to April.

## **New Pallet Association**

A NEW trade group, the National Wooden Pallet Manufacturers Association, was organized as a result of a national pallet conference held at the Hotel William Penn in Pittsburgh, October 15. The conference was attended by some 40 persons interested

in the field of wooden pallet manufacturing.

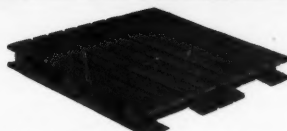
The new group was to begin operations on November 1, and active membership in it is open to any firm or persons who own or operate established wooden pallet manufacturing facilities. Associate memberships (without the right of vote) are open to wholesalers, jobbers and distributors of wooden pallets, manufacturers of wooden pallet supplies and materials, or any other individuals or firms connected with the wooden pallet industry.

The association will maintain its headquarters at 201 Barr Building, Washington 6, D. C., and will operate out of the office of the National Wood-Box Association. The officers of the association as elected at Pittsburgh are as follows:

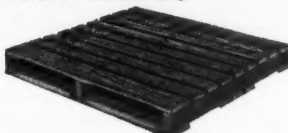
President—Ray W. Capron, Midwest Pallet Corp., Indianapolis, Indiana; Vice-President—R. B. Sapinsley, Hopkinsville Wood Craftsmen, Hopkinsville, Kentucky; Treasurer—C. R. Blydenburgh, Oakwood Products Co., Naragansett, R. I.; Secretary-Manager—Wm. H. Sardo, Jr., 201 Barr Building, Washington 6, D. C.

The immediate plans of the pallet association include (1) the adoption and publication of a set of minimum standard specifications for wooden pallets, and (2) the establishment of a trademark or brand in conjunction with the standard specifications as a guarantee of uniform quality to wooden pallet purchasers.

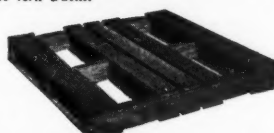
## PROMPT SHIPMENT AT LOWEST PRICES ON ANY PALLET ORDER FROM 1 CAR to 100 CARS!



No. 1—Stevadors of Cargo Pallet. Non-reversible, double-faced, with over-hanging deck boards to permit use with sling.



No. 2—Standard Double-Faced Non-Reversible Pallet. Slatted deck design. Bottom boards are spaced to permit entry and elevation by either hand-truck or electric fork trucks.

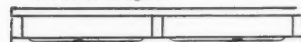


No. 3—Reversible Double-Faced Pallet. Both upper and lower deck boards are spaced to permit entry of pallet trucks.

Continuous repeat orders from many of the largest industries prove beyond a doubt that the OZARK MASTER PALLET is the master of all Hardwood Pallets. Constructed of the Ozark Hardwoods, expertly manufactured, holes predrilled to eliminate splits, entry boards chamfered for easy entry of wheels. Four Ways, Eight Ways, Standards, Light and Soft Woods. Write, Wire or Phone your requirements. Prompt Shipments.

### Representatives Wanted!

Attractive commissions can be earned by our sales agents. Get our proposition. Many good territories still open.



CHAMFER END BOARDS FOR EASY TRUCK ENTRY

## OZARK PALLET COMPANY

P. O. BOX 63,

BERGMAN, ARK.

PHONE L. D.

## IF YOUR LIFT IS WRONG SIZE—TRADE FOR ONE OF THESE



CLARK  
3-Ton Gas  
Powered  
\$2400\*

2-Ton Gas  
Powered  
\$2000

2-Ton  
Electric  
\$2000

3-Ton  
Electric  
\$3000

\*Some Have New Tires  
At Additional Cost



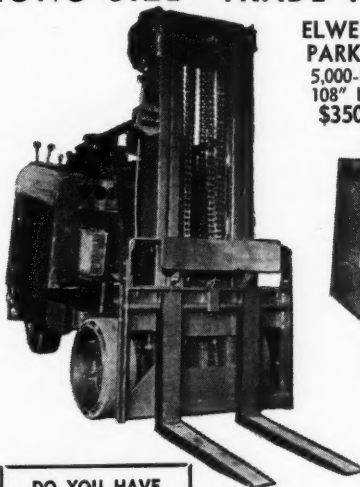
TERMS IF  
DESIRED  
\$42.50 - \$1000  
1 YEAR

AUTO-  
MATIC

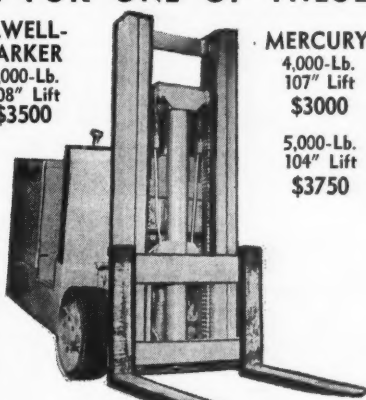
5,000-Lb.  
119" Lift  
\$3500

6,000-Lb.  
119" Lift  
\$4100

Battery Or  
Ready-Power  
Furnished  
Extra



ELWELL-  
PARKER  
5,000-Lb.  
108" Lift  
\$3500



MERCURY  
4,000-Lb.  
107" Lift  
\$3000

5,000-Lb.  
104" Lift  
\$3750

All Vehicles Reconditioned and  
Sold with New Truck Guarantee

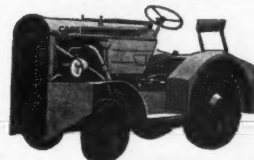
DO YOU HAVE  
PROBLEMS IN  
YOUR WAREHOUSE?  
LET US SOLVE  
THEM

We have graduate  
engineers with years  
of Army and civilian  
experience in material  
handling and  
warehousing.

YOU CAN ALSO RENT  
THIS EQUIPMENT BY  
THE DAY, WEEK OR  
MONTH USING YOUR  
OWN OPERATORS.

### PLATFORM TRUCKS

Low and High  
Lift  
2-4-6-10,000 Lb.  
Capacity  
Yale, Automatic  
Baker,  
Elwell-Parker



GASOLINE  
& ELECTRIC  
POWERED  
TRACTORS  
Solid &  
Pneumatic  
Tires

## HARRY M. RICHTER, Inc.

PHONE AT lantic 1631 Cleveland, O. 7:30 a.m. to 4:00 p.m.  
Foot of W. 45th St.—Former American Shipbuilding Yard—First turn  
toward lake west of High Bridge off Bulkley Blvd. 5 minutes from  
Square. OWNED, OPERATED AND MANNED BY VETERANS OF  
WORLD WAR II.



# HALLOWELL

*sturdy,  
Easy Rolling*  
**TRUCKS OF STEEL**

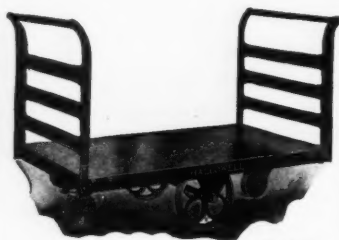


Fig. 769  
Pat. applied for

are truly built for hard, long wear. Heavy loads can be moved with little effort on these "Hallowell" Trucks of smooth, splinter-proof Steel because their wheels and casters roll so freely. Types and styles—each a model of smooth-running durability—are available for every service.

Write for our "Hallowell" Truck Catalog.



Fig. 750  
4-Pipe Stakes



Fig. 760  
1-Bar Handle



Fig. 772  
1 Rack



Fig. 762  
2-Pipe Stakes



Fig. 757  
2-Bar Handles



Fig. 753  
4-Wooden Stakes

"Hallowell" Products are sold  
entirely through Industrial  
Distributors.

Over 44 Years in Business

**STANDARD PRESSED STEEL CO.**  
JENKINTOWN, PENNA., BOX 799

Boston • Chicago • Detroit • Indianapolis  
St. Louis • San Francisco

## OPPORTUNITIES

*Men wanted      Jobs wanted      Lines available*

Rates: for "Positions Wanted" \$3.50 minimum, limit 25 words. For all other classifications \$3.50 minimum for 25 words, each additional word 10c; bold-face type or all capitals, \$6.00 minimum for 25 words, each additional word 15c; limit 50 words. Box addresses count as five words. All insertions are payable in advance.

### EXPORT LINES WANTED

Export Department of firm specializing in sale of Materials Handling Equipment wants additional lines. Will act as export department for manufacturers. Experience in domestic and foreign sales.

#### INDUSTRIAL EQUIPMENT DIVISION

International Worldmarket, Inc.  
16 Court St. Brooklyn, N. Y.

### USED MATERIAL AND EQUIPMENT

Sound used lumber for pallets, platforms, skids, boxes, crates, forms, blocking, braces, etc. Gum and Poplar boards, 4 to 12" wide, 4 to 16' long, planed to 3/4" thickness @ \$40.00 M. Yellow Pine 2 x 4's, 3' - 8" and 7' - 4" long, planed to 1 1/8" x 3 3/8" @ \$40.00 M. Prices f. o. b. Camp MacKall, North Carolina, in carloads. CUYAHOGA WRECKING COMPANY, 6311 Kinsman Road, Cleveland, Ohio.

1—5 ton LO-HED Hand Geared Trolley Hoist, completely reconditioned by the Milwaukee Crane and Service Co. and is guaranteed by them as new. Specifications:

Current—220 volts D.C.

Motor—5 1/2 H.P.

Capacity—10,000 lbs.

Model—LO-HED H4

Price—\$965.00.

GALLAND-HENNING MFG. CO.  
Milwaukee 7, Wisconsin

About 800 36" x 48" double face 4-way plywood pallets with 1/2" decks and 2" high plywood block posts, weight 37 lbs., well made, best quality material, suitable handling light loads. Made up through error and offered at a quick sale price. Box 12147.

For Sale: One Economy power drum lifter and dumper, in perfect condition. Architectural Tiling Company, Inc.  
101 Park Avenue  
New York City

### COMPLETE SPRAY PAINTING SET-UP

INCLUDES WATER WASH (SPRAY) TANKS (2), PRE-HEAT OVEN, 2 SPRAY BOOTHS COMPLETELY EQUIPPED, 2 DRYING OVENS WITH CHAIN, TRACK AND BEAM FRAME. OVERALL SIZE APPROX. 25x35 FT.

#### BUY AT YOUR OWN PRICE 1/2 COST

OTTAWA STEEL & MFG. CO., INC.  
1052 OTTAWA, N. W.  
GRAND RAPIDS 5, MICHIGAN  
PHONE 6-8553

For Sale—Hyster—"40" pneumatic-tired forklift truck, rated 4000# at 15". In use 5 months, purchased new, excellent condition. Concrete Masonry Corporation, Elyria, Ohio. Phone 3187.

### REPRESENTATIVES WANTED

MATERIAL HANDLING SALES ENGINEERS. Unusual opportunity to act as Regional Managers of Sales leading Industrial Electric Trucks and Conveyor systems. Exclusive protected Southern Milwaukee and Wisconsin territory open. Strictly commission proposition. Established business with some stock and complete Service facilities. Box 12247, FLOW.

### POSITIONS WANTED

### MATERIALS HANDLING ENGINEER

Desires position large plant in materials handling. Executive ability. 12 years experience. All types of equipment. Many plants. Box 12347, FLOW.

If your company wants to build a National Dealer or Distributor Organization or develop a Direct Sales Force in New Jersey or Metropolitan New York drop me a line and let's talk it over.

I am 58 years old and glad of it because it has given me a lot of valuable experience. Have just finished a good job for a war baby and am ready for the next January 1st.

Box 12447 FLOW

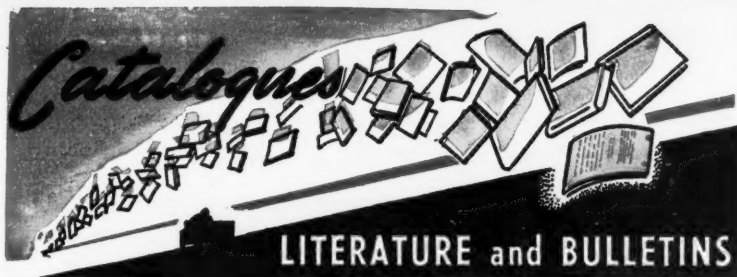
### EQUIPMENT WANTED

WANTED IMMEDIATELY  
FORK LIFT TRUCKS  
GAS OR ELECTRIC  
HIGH PRICES PAID  
A&A MACHINERY

1267 Flushing Ave., Brooklyn, N. Y.  
EV 7-9466

**FLOW**





The publications featured on these pages were written by experts. They are FREE publications. To obtain these use the postcard bound into this issue.

**395—Corrosion Resistance Computer . . .** Free distribution of the Harper Computer of Corrosion Resistance has been announced by H. M. Harper Co., manufacturer of fastenings of brass, bronzes, Monel metal and stainless steels. The device, in slide rule form classifies 13 non-ferrous and stainless steel alloys in 142 corrosive applications. It is said to be useful to anyone faced with a corrosion problem in manufacture or maintenance.

**396—Material Handling Book . . .** How to achieve complete coordination of all steps in material handling at relatively low cost is described in a free new book on "The Turner System of Material Handling." Descriptive pages indicate how this method created savings in handling, floor space and equipment cost for hundreds of concerns. Subjects covered are concentration of material within easy reach of operators, vertical and horizontal expansion, practical stacking and storing, elimination of waste motion in handling, and use of movable transports, bin sections, die and shelf racks, pallets, trays, etc. It is issued by Factory Service Co.

**397—Portable Lifter . . .** A hand operated Shoplifter, Type D, is described in a new bulletin issued by Economy Engineering Co. The device is designed for lifting barrels, boxes, loading street trucks, draining containers into high vats and acts as an adjustable shop table. A new catalog, 940B, showing the company's complete line of lifters is also available.

**398—Trough Belts . . .** Trowbridge Conveyor Co. has issued a catalog describing its trough belt conveyors which are used for handling abrasive materials such as sand, gravel, cinders, coke and similar products. Standard sizes can be furnished with electric motor or gasoline engine drive, "V" or mast type carriage and optional pneumatic tires.

**399—Woven Wire Belts . . .** The Cambridge Wire Cloth Co. has issued a 56-page booklet, "Woven Wire Conveyor Belts for Industrial Applications." Subjects covered are metals and alloys used in belt construction, types, high temperature belts, woven wire designs, installation and operation, and applications of the belting.

**400—Air Compressor . . .** A new bulletin, Form C-7, on air hoists, air cylinders and air compressors has been issued by the Curtis Pneumatic Machinery Division of Curtis Manufacturing Co.

**401—Pneumatic Material Handling System . . .** Sprout, Waldron & Co. has made available a brochure describing its Pneu-Vac System for collecting and con-

veying material through the use of reduced pressure.

**402—Pallets . . .** Five different styles of hardwood pallets are described in a folder issued by Mowbray & Robinson Lumber Co. It illustrates the different styles of pallets for use with various handling equipment and lists construction specifications.

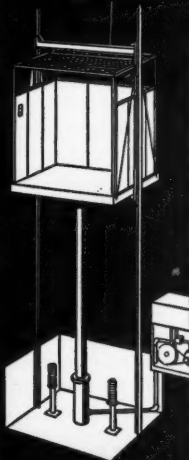
**403—Material Handling Catalog . . .** Lewis-Shepard Products, Inc., has announced its new Material Handling Catalog No. 23. Printed in three colors, it contains 86 pages, and the cover has a special filing tab for quick visual reference. It features large-size illustrations of the equipment produced by the company's Power Division and Hand Operated Division. Installation photographs are reproduced in duotone.

**404—Steel Shelving . . .** A six-page circular listing steel shelving, in a variety of sizes, some of which can be shipped immediately from stock. Offered by Precision Equipment Co.

## SLING CHAIN DATA AVAILABLE FREE

A comprehensive 28-page sling chain catalog, designed for quick reference, is available from American Chain & Cable Co., Inc. Advantages, limitations, descriptions and specifications of steel, iron and alloy slings are explained in simple everyday language. All attachments and their possible uses are charted for easy reference. With this book, it is simple to find the type, style and material needed to fill a particular purpose. Tensile strength, Rockwell hardness, safe loads and specifications are given for the various types of sling chains, "Seven Points to Consider . . .", manufacturers' definitions, care, inspection, and safe working loads are but a few of the important pages in this ACCO Registered Sling catalog. Copies may be obtained by writing to FLOW.

## Need a New ELEVATOR?



Elevator rises as oil is electrically pumped into jack. Descent by gravity.

### Here's Your Best Buy For 2, 3 or 4 Stories

Oil hydraulic Elevators are designed for dependable operation at lowest cost. No penthouse or heavy load-bearing shaftway structure required . . . powerful hydraulic jack pushes load up from below. Extremely smooth and accurate landing stops.

#### OTHER ADVANTAGES

Power used during rise only—economical. Compact electric power unit. Car sizes and capacities as required. All popular controls. The most practical elevator for rises up to 40 feet. For freight or passenger service.

Write for Catalog RE-301

ROTARY LIFT CO.

1060 Kansas, Memphis (2), Tenn.

Rotary

## OILDRAULIC ELEVATORS



Reg. U. S. Pat. Off.



# Container Quiz

What? why?  
which? where?  
when?



General All-Round Box



General Nailed Box



General Corrugated Box



General Wirebound Crate



General Cleated Corrugated Container



General Pallet

**IMPORTANT NOTICE**  
New plants and expanded production facilities are now in full operation. Your inquiry or order will receive prompt attention.

## ALL TYPES OF ENGINEERED SHIPPING CONTAINERS



## GENERAL BOX COMPANY

GENERAL OFFICES: 60 West Illinois Street, Chicago 10, Illinois

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, New Orleans, Louisville, Milwaukee, Sheboygan, Winchendon, Natchez. • Continental Box Company, Inc.: Houston, Dallas.

• The answers to these 5 questions are of vital interest to all those concerned with the better packing of their products.

"**WHAT**" container will provide better protection, will best ship our products?" We think that General Boxes will provide better and more economical protection for your products.

"**WHY**?" Because they're designed specifically to the product, as a "Part of the Product."

"**WHICH** type of container will do the most efficient job?" The answer to this important question is provided by our Engineering Service.

"**WHERE** is this service available?" For complete information just write our nearest office.

"**WHEN**?" . . . is best answered by your doing this right now.

# PACKAGING MECHANICS



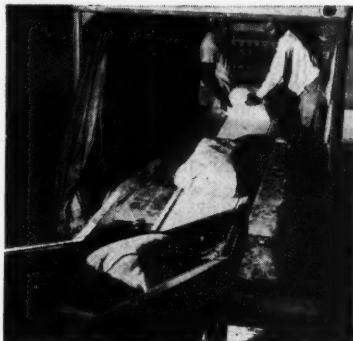
## Hourly Capacity: 30,000 Pounds of Flour

*One operator can bag over 30,000 pounds of flour every hour, with these further improvements. 1. Better sanitation. 2. Less shrinkage. 3. More effective space utilization. 4. Lower costs.*

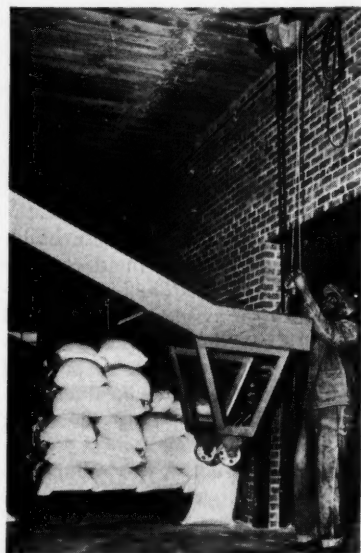
A CARLOAD of flour can be shipped every three hours from the Cleveland Division of Montana Flour Mills Co., where a new semi-automatic packaging line was recently installed.

This modern equipment, plus additional units now on order, is expected to completely eliminate the antiquated system which involves filling of bags to approximate

tion, the operator stands between the two filling tubes of the machine. He places the bottom of the folded paper container in a slot provided in the bag seat as he slips the filling valve over one of the tubes. After the bag clamp has been applied, filling proceeds. Here are the details. 1. Flour flows from the supply bin by gravity to a running scale feeding unit, with load level



**PORTABLE BELT.** Caster-mounted fabric belt line carries bags from chute into out-bound vehicles.



**CLEARs DOOR.** Power hoist elevates hinged chute for floor truck traffic through dock door.

weight, net weighing and sewing. Each of these operations, with the old method, required the manual

lifting of 100-pound bags.

In the new packaging setup, only two incidental manual operations are required. These are (1) clamping an empty bag on the filling tube, and (2) tucking in the valve sleeve of the filled bag. The heaviest lift required of the operator is the weight of an empty multiwall paper bag.

Compared with two 100-pound bags per minute by the old way, one operator can now fill and dispatch to the warehouse between four and five 100-pound bags per minute. With increased proficiency, this filling rate is expected to reach six bags, the capacity of the new machine.

### One-Man Operation

In the one-man packing opera-



**CLEATED BOOSTER.** 100-pound bags of flour are raised above working level enroute to warehouse.

controls automatically maintaining a supply of five barrels in the unit. 2. A feed screw forces the flour into



## PACKAGING MECHANICS

the scale bucket which automatically weighs and then dumps the charge into one of two screw filling units. (The scales permit a tolerance of four ounces per 100 pounds, stopping the packaging machine if this is exceeded.) 3. A feed screw within the filling tube forces the flour into the bag clamped on the tube.

(While one bag is being filled,



### Packaging Executives

Many new ideas of particular interest to Packaging Executives will be found in the almost 200 exhibits at the Second National Material Handling Exposition in Cleveland, January 12 to 16, inclusive.



the operator closes the sleeve valve on the other bag which has been filled by the opposite filling tube. He then clamps an empty container on the tube. Any delay in clamping the bag, automatically stops the filling cycle.)

4. During the filling operation, a settler vibrates the bag chair, distributing the material uniformly in the multiwall paper receptacle. 5. When the weighed charge is in the bag, the bag clamp is actuated and a pusher discharges the package in a standing position from the chair to a trap gate, where it stands while the operator closes the sleeve valve.

When the bag on the opposite filling tube is discharged, as previously described, the trap is sprung and the closed container falls on a powered 14-inch woven fabric belt moving at floor level.

### Moved to Warehouse

It is carried a short distance to a cleated slat booster which elevates it above working level and deposits it on an enclosed 24-inch woven fabric conveyor belt. The latter runs 140 feet through a bridge to

### TWO - FLOOR LAYOUT

1. Take-off gate routes bags from belt. 2. Table gate delivers to second floor, where operators are at work. 3. Friction brake slows bags moving to first floor, as shown in sketched extension to ground floor.



the second floor of the warehouse across a street from the mill. The conveyor extends overhead a distance of 50 feet into the storage floor, as shown in one of the photos.

Three take-offs are provided, each equipped with a chute passing through the floor to ground level. The chutes have friction brakes and bag flatteners. One chute has a gate providing for delivery to a loading table on the second floor. The bags arriving from the mill across the street can thus be routed to any of several locations on the second floor, or direct to loading stations on the floor below.

On the ground floor, two of the chutes end on loading tables beside doors leading to the rail car platform. The loading tables are on a level just below shoulder height. This makes possible loading of skids or floor trucks to the sixth tier without requiring special exertion on the part of operators.

As previously indicated, this arrangement delivers the packaged flour from the one-man bagging operation to trackside, without handling, at the east side of the buildings.

The third chute brings the flour to a temporary storage area in a remote part of this floor. This takes care of excess stock when the second floor may be loaded.

Loading of delivery trucks is

done on an enclosed dock at the north end of the building. From ground floor storage, skids carrying 40 bags, or two tons, are moved into the vans by powered hand trucks. Highway vehicles can also be loaded direct from the floor above, as follows. Stock from the second floor is dispatched through two hatchways to hinged chutes leading to the loading docks.

### Telescopic Chutes, Portable Conveyor

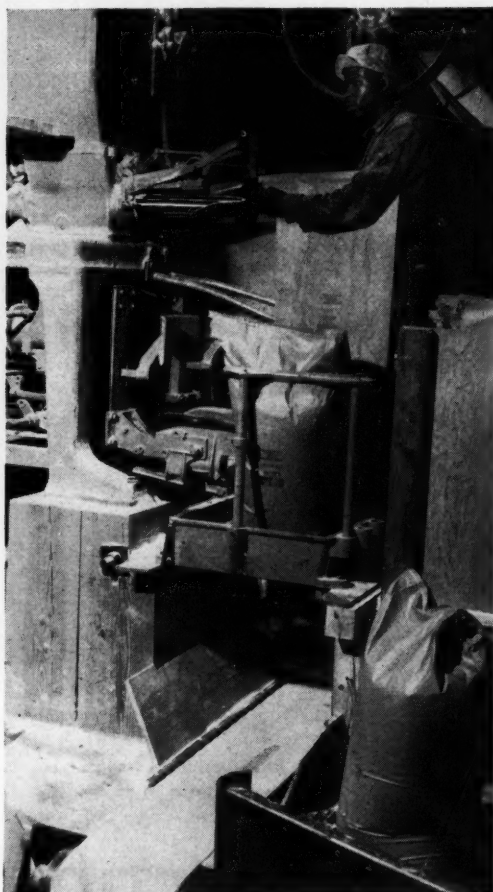
The discharge ends of the chutes are 30 inches off the floor. Each chute is telescopic in construction, permitting a 10-foot extension to the dock edge. This arrangement permits its withdrawal from the dock edge to the inside of the building in order to close the doors during cold weather. The bags are carried into the nose of the outbound vehicle by the following arrangement. A 30-foot portable powered fabric belt is positioned under the end of the chute, thus delivering the 100-pound bags to the loaders inside the truck. As loading proceeds, the portable conveyor is gradually moved back.

When loading is from skids brought to the dock, the chutes are lifted clear of the door ways by chain-type powered hoists, permanently suspended from the ceiling at each loading door.

This up-to-date method of pack-



## PACKAGING MECHANICS



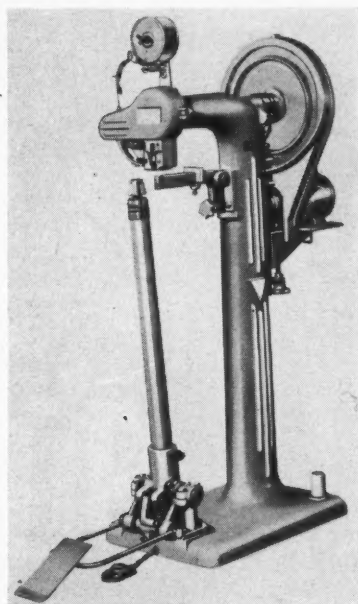
**ONE OPERATOR.** Automatically-weighed flour fills bag after it is clamped on packaging tube.

sides) individually or simultaneously.

\* \* \*

### LINE OF CARTON STITCHERS

**A** COMPLETE new line of stitchers for use in box making, packaging, assembling, ticketing and manufacturing is now being marketed by A. J. Gerrard & Co., manufacturers of Steelbinder and Bulkfinder steel strapping equipment. The new stitchers are said to handle a wide range of wire sizes, and insert 150 to 350 staples per minute, with a micro switch attach-



ment automatically controlling spacing between stitches.

aging has brought several advantages to Montana Flour Mills, in addition to increased packaging capacity. Among these are: Increased sanitation. 2. Reduction in shrinkage of packaged goods formerly caused by sifting and dusting. 3.

Greater warehousing capacity with more rigid packages (than cloth bags), permitting neater stacking on skids and outbound vehicles. 4. Reduced non-productive costs through elimination of unnecessary handling.

### CARTON STAPLERS

**I**NTERNATIONAL Stapling Machines close tops and bottoms of corrugated or fibre cartons, simultaneously from the outside.

They accomplish this by means of "The Retractable Anvil." This device drives the staple from the outside, and securely clinches inside, without disturbing the contents of the carton. The anvil penetrates the container, the staple is driven against it, the clinch is formed inside, and the anvil withdrawn, making a neat closure.

Portable and stationary models

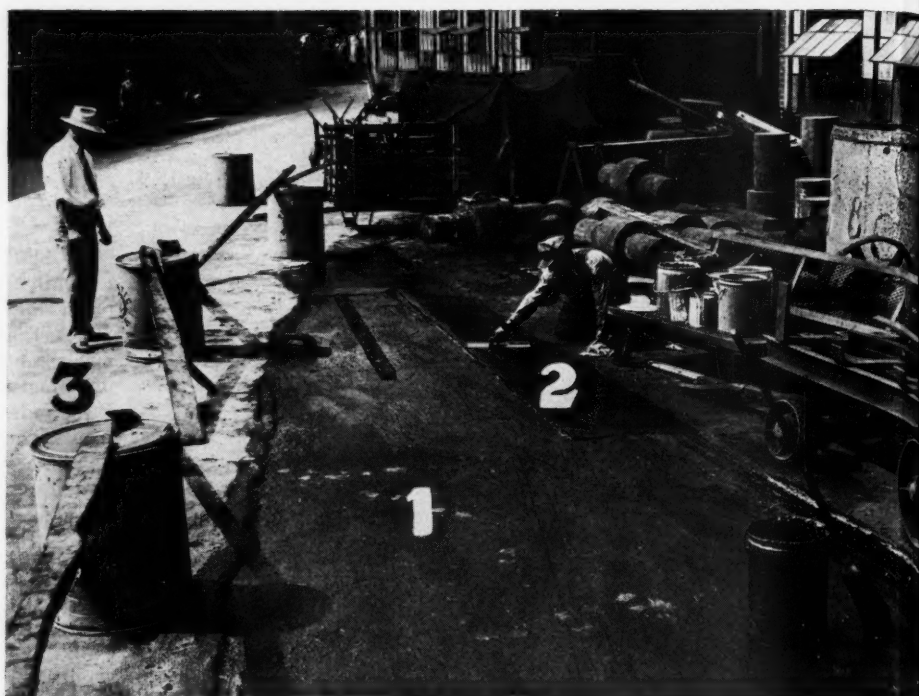
are offered. The latter is shown here. The portable staplers are manually or pneumatically operated, and were designed for use where shipping is decentralized, space is limited, or when volume is not too large. The stationary model is pneumatically or electrically operated, and designed for use where facilities are centralized, where volume is large, or when cartons are hard to handle.

Installations have been made to handle cartons of variable lengths, widths, heights and cartons of variable board thicknesses . . . and to clinch top and bottom (on two

### FAST PRODUCTION PACKAGING

**S**PECIAL interior packing, concentrated loads, and fast production line packaging are featured in a new brochure by the General Box Company. Information as to how these important packing problems are solved is clearly presented in "picture story" form. Photographs from three important manufacturers of diversified lines show the entire packaging procedures involved. Other sections of the booklet describe the steps taken in engineering a new container to the General Box "Part of the Product" Plan.

**RESURFACING RUNWAY FOR LIFT TRUCKS.** (1) Bond coating. (2) Application of surfacing material. (3) Completed surface, with water-resisting emulsion riddled with silica sand (emulsion and sand used only on exterior applications or where water-resistance is desired).—Exhibits, courtesy United Laboratories, Inc., Cleveland, Ohio.



# Smooth FLOORS— Smoother PRODUCTION

*The efficiency of modern handling equipment is greatly reduced when the industrial floor is not kept up to par with the vehicles that roll over it. Systematic flooring maintenance in mills, factories, loading facilities, warehouses and shipping rooms is an aid to efficient material flow, and thus to production. Here are some maintenance suggestions.*

**T**HE repairing of industrial floors has only fairly recently shown vast improvement in materials and application processes. Such renewing is today done to a large extent with mastics, or asphalt-base materials, the method described here. Some years ago these materials were not so popular and lost ground among industries due to inferior products and improper knowledge of application. Shortly before the war better materials were discov-

ered and improved formula and application methods developed.

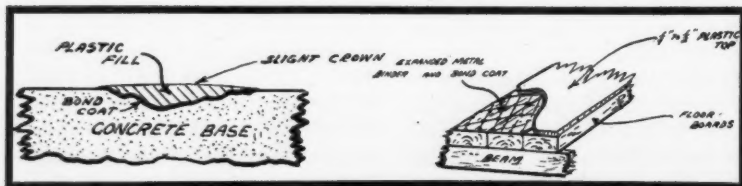
Certain of these new materials now available are delivered completely mixed and ready for use—the only ingredient lacking is water. All ingredients are accurately proportioned, eliminating guesswork as to formulae and mixing. The application can be made either by a contractor or the plant's maintenance crew.

In all-mastic resurfacing jobs the thickness of the applied material seldom exceeds one half inch, nor is it wise to exceed that figure very far. It is applicable over concrete, wood, brick, steel—most any solid and clean base.

The simple procedure for patching or surfacing is illustrated in the drawings on these pages. The surface is first cleaned thoroughly. No chipping is required. A bonding ma-

**SLIGHT CROWN ON PATCH** is compacted by traffic, and forms even surface with use.

**OVER WOOD FLOORING.** Drawing shows expanded metal binder and re-surfacing.



terial is then brushed over the surface. In the case of wood floors, expanded metal binder is nailed down to prevent any movement of the old boards. The product is applied in a manner similar to that of concrete. The finish troweling job is delayed until the floor has taken its initial "set." Rolling is seldom necessary and then only under certain conditions.

The resultant surface is one that will pack and improve with use. And, whether wet or dry, the floor remains skid-resistant. Because of its resilient nature, noise from moving traffic is reduced, and such small articles as nuts, bolts, screws, and tiny metal particles are compressed into the floor by moving vehicles.

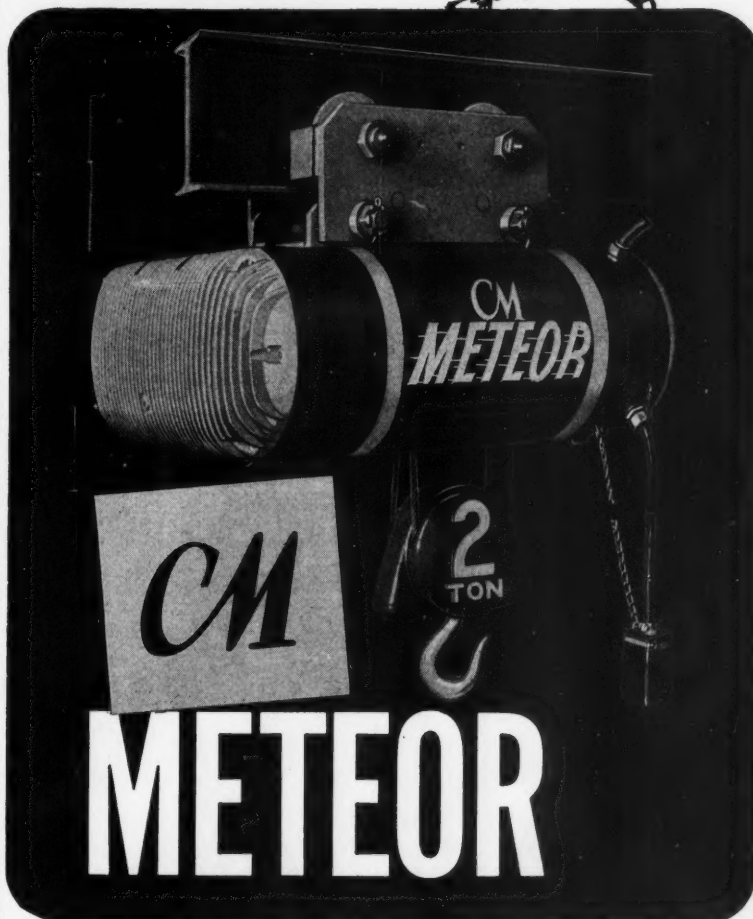
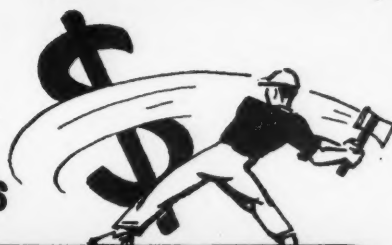
While the resilient, dustless and fire-retardant nature of mastic materials offers certain advantages, they should not be considered a cure-all for every floor problem. Like any other type of flooring, they have their applications and their limitations. Areas subjected to the constant presence of cutting oils, greases, fats, certain acids and other asphaltic solvents should not be repaired or resurfaced with this type of product. However, the occasional dripping of oil and grease from motorized vehicles will not be harmful to this flooring material. The mastic flooring (sometimes called plastic) is well suited as a resurfacing material for floors subjected to heavy loads.

Flooring of concrete, wood block, steel plate, brick, magnesite, and many special compositions, all have their particular applications. These are determined by the conditions of manufacturing and traffic. No one type of flooring can meet all the needs. An early article will discuss why flooring must be "tailor-made" according to specific requirements.

#### They Are Experts

Your entry in the current Material Handling Cost Reduction Contest will be judged by the experts listed on page 19. Each one is a specialist in his particular field, each with a first hand knowledge of material handling and costing procedures. Your paper must be mailed by midnight, December 15, to qualify for the \$1,500 prize money.

**Watch this  
Electric Hoist  
cut handling costs**



**S**EE the speedy Meteor in action and you'll agree that materials handling costs are down for the full count. This heavy duty electric hoist is an outstanding performer... a time and money saver. Helical gears, airplane type cooling, low headroom, thermal protection, only 110 volts at push button station... and speed... are but a few of the Meteor's notable features. Bulletin 142 will tell you about all of them. Better still, the Meteor itself will bring you all of them.

Capacities from  
½ ton and up.  
Lifting speeds  
from 18 to 60  
feet per minute.

# CHISHOLM-MOORE

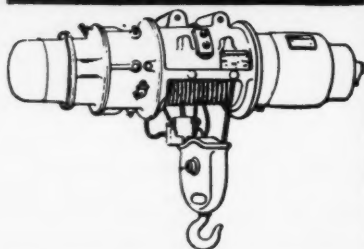
## HOIST CORPORATION

(Affiliated with Columbus McKinnon Chain Corporation)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.  
SALES OFFICES: New York • Chicago • Cleveland • San Francisco • Los Angeles



FOR IMMEDIATE DELIVERY  
**NEW ELECTRIC HOISTS**  
PRICED FOR QUICK SALE!



14 new hoists manufactured by Shepard Niles Crane & Hoist Corp. Includes 126 feet of  $\frac{3}{8}$ " cable and limit switch. Suitable for elevators, overhead cranes or other hoisting equipment.

- 4 Horse Power • Single Phase
- 110 Volt • 2000-lb. capacity
- 60 Cycle • 1725 R. P. M.

ORIGINAL PRICE . . \$733

**Now Only \$275**

**CALUMET**  
IRON & SUPPLY COMPANY  
175 W. Chicago Ave., East Chicago, Indiana

# Why?

## ENGINEERED DESIGN PALLET?

Due to conditions which are inherent and an intrinsic part of the fork truck—pallet operation, the susceptibility of the pallet to damage is acute. The high cost of pallet maintenance has, in numerous cases, absorbed the savings accrued from the installation.

ENGINEERED DESIGN capably determines what designs of pallets will require the least maintenance and incorporates in those designs features which make subsequent necessary maintenance as simple and inexpensive as possible.

**Pallets Incorporated**

Manufacturers of  
**ENGINEERED DESIGN Pallets**  
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# CASTERS!



Semi-steel castings with light-alloy, rubber-tired or metal wheels... Swivel assembly has double-ball race... Grease gun fitting on both swivel and wheel... 4", 6" or 8" wheels available.

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2122 WALNUT ST. • ST. LOUIS 3, MO.



## The "LITTLE HUSTLER" TRANSFERS STAMPINGS AS FAST AS PRODUCED!

The "Little Hustler" is fully portable and quickly adjustable to a wide range of applications. The 8 foot size shown above has a maximum delivery height of 81 inches at 45° and 50 inches in a horizontal position. Made in 13 models: 4-6-8-10 and 12 ft. long, by 12", 18" or 24" wide. Also special sizes. Send for circular LHC. We design and manufacture permanent conveyor systems and all types of SPECIAL EQUIPMENT.

**MAYFRAN**  
ENGINEERING, INC.  
Development Engineering and Manufacturing  
1710 Clarkstone Rd. Cleveland 4, Ohio

## OFFICE FURNITURE ASSEMBLY

(Continued from page 20)

wood, are generally of light weight and can be stacked high by use of stakes.

Most of the buildings are contiguous and several have common walls, making travel from building to building an inside operation. In the multi-story buildings, elevators make transfers of material from floor to floor. On the longer hauls, powered industrial platform lift trucks transport skidded loads or bulky items such as cabinet assemblies.

During processing operations in the mill, platform trucks of the tilting type, with a swivel caster, fore and one aft, move piece parts from work station to work station. Hand trucks of the four-wheel type are also used. On these are accumulated parts for a particular assembly.

When a sufficient number of units have been accumulated to complete a required number of assemblies, the parts are started through the line. The platform hand trucks containing the piece parts are swung into position at the proper stations and the assembly begins. These trucks permit the setting up of an assembly line in very little time, and the line can be lengthened or shortened depending upon the number of operations to be performed on the product going through.

### Castered Dollies, Rack Trucks

For some of the larger items, such as filing cases, a castered dolly is used at the beginning of assembly operations. The framework and shell are assembled on this dolly and are thus moved along the assembly line.

The castered dolly carries the wood file cabinet through all operations, including finishing, and makes handling of this bulky, though relatively light piece a very simple operation.

For smaller products, castern-mounted rack trucks are used in the assembly and finishing lines. Some of these racks are of the shelf variety and others are of the slat type and have supporting extended arms. Hundreds of small sub-



assemblies and completed assemblies are moved about on these carriers.

### Slat and Overhead Conveyors

The main assembly line is set up to handle assembly of either steel desks or filing cabinets, which are run through the line in separate lots.

The beginning of operations is the placing of the shell for the desk or cabinet on a slat conveyor. Along its line of travel are several work stations to which parts have been brought on hand trucks or on skids carried by platform lift trucks. As the product moves down the line on the slat conveyor, piece parts are added until at the end of the line the assembly is ready for painting. An overhead chain conveyor dips down at this point, where the assembly is hooked on and carried through the spray booths.

After snaking back and forth for drying purposes, the chain conveyor carries the painted assembly to another department where it declines above another slat conveyor. Here the products are removed for further assemblies. Paralleling this second slat conveyor is a belt line on which parts for drawer assemblies and fasteners are carried. These are taken off by sub-assembly operators stationed about the line. The completed units are routed on the belt to the workers stationed along the slat conveyor, who add them to the main assembly.

At the end of the slat conveyor is a gravity roller section to which the assembly is transferred. Here the desk or cabinet approaches floor level where it is tilted up onto a casted dolly.

A line for final fitting and inspection consists of two channel tracks set in the floor. The casted dollies carrying the assembly ride in these channel tracks during final operations. The completed product remains on this dolly for transport via elevator to the shipping department on the floor below.

Flexibility (so necessary where parts and assemblies for many diversified products pass through the same lines) is the chief characteristic of the material handling methods set up at the Globe-Wernicke Company.



### NOW . . .

you can streamline your shipping department. Durable, rapid-fire Hansen Tackers speed carton assembling, lining, sealing, tagging, etc.

### NOW . . .

your operators can drive tacks or staples as fast as they can squeeze the handle—accurately, firmly. Magazine holds scores at one loading.

### NOW . . .

is the ideal time to cash in on the speed, simplicity, and economy of Hansen operation. There is a Hansen Tacker to fit every job.



**A. L. HANSEN MFG. CO.**

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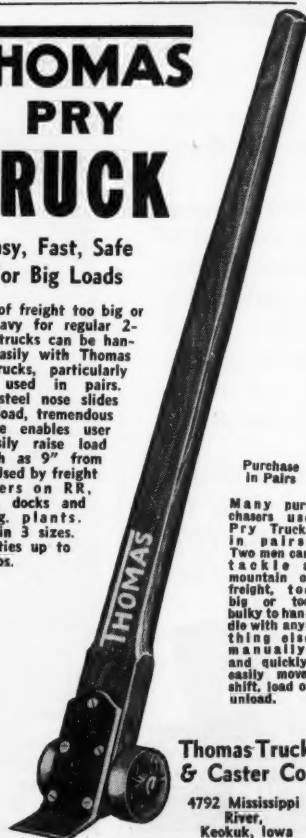
## THOMAS PRY TRUCK

Easy, Fast, Safe  
For Big Loads

Loads of freight too big or too heavy for regular 2-wheel trucks can be handled easily with Thomas Pry Trucks, particularly when used in pairs. Sharp steel nose slides under load, tremendous leverage enables user to easily raise load as high as 9" from floor. Used by freight handlers on R.R. trucks, docks and in mfg. plants. Made in 3 sizes. Capacities up to 5000 lbs.

Purchase  
in Pairs

Many purchasers use Pry Trucks in pairs. Two men can tackle a mountain of freight, too big or too bulky to handle with anything else manually, and quickly, easily move, shift, load or unload.



**Thomas Truck & Caster Co.**

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The Standardized Inclinebelt elevates and lowers commodities. The rough surface belt is set permanently at 28 degrees. Two belt widths are available: 14 inch for commodities up to 15½ inches wide; 24 inch for commodities up to 25½ inches wide. Both widths are made in lengths for floor to floor elevations of 8 ft. to 14 ft. 6 inches inclusive.

Furnished with or without the horizontal feed section at the bottom. Top end is curved like a gooseneck to provide horizontal feed or discharge of commodities. Size and type motor depends on local requirements and current available. Write for Bulletin FL-127.

## STANDARD CONVEYORS

Sales and Service in  
All Principal Cities

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Write and tell us your particular needs. We can give you what you want. Let us make recommendations. No obligation, of course.

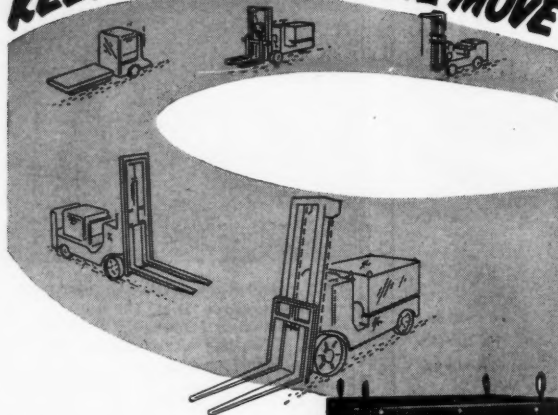
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Rectox is fully automatic—has no moving parts. For all types of batteries. Write for booklet B-3642. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-21400-A

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PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

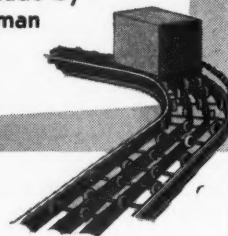


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There's only **ONE** Rust Proof  
"RED WHEEL" CONVEYOR

and it's made by  
Buschman



For any package handling job at all, be sure you specify Buschman rustproof "RED Wheel" Conveyors. They stand the gaff . . . even in wet or damp locations. Buschman "Red Wheel" Conveyors can be set up in a jiffy . . . they cost no more . . . offer better service and easily outlast the conventional type. For full details, ask for Bulletin 10.

**The E. W. Buschman Company**

Winton Place

Cincinnati 32, Ohio

You are cordially invited to visit the Buschman booth, Number 403, at the 2nd National Materials Handling Exposition in Cleveland, January 12-16th, 1948.

**SPOOLS**

Bulky, "hard-to-handle" spools of wood, steel, magnesium or combinations of wood and steel are efficiently handled in every department of this midwestern spool manufacturing plant. Light weight, durable Lewis Box Trucks have been standard equipment for this manufacturer since "way back when". Does that spark an idea for the solution of your material handling problem? Send for details.

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HANDLING  
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STACKING BOXES  
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### POSITIVE CONTROL of Amount and Frequency of LUBRICATION

AUTOMATIC trip injects measured amount of lubricant into trolley bearings and onto every chain link pin every round trip. No human fallibility — no chance for missing.

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### Coal Handling for Small Heating Plants

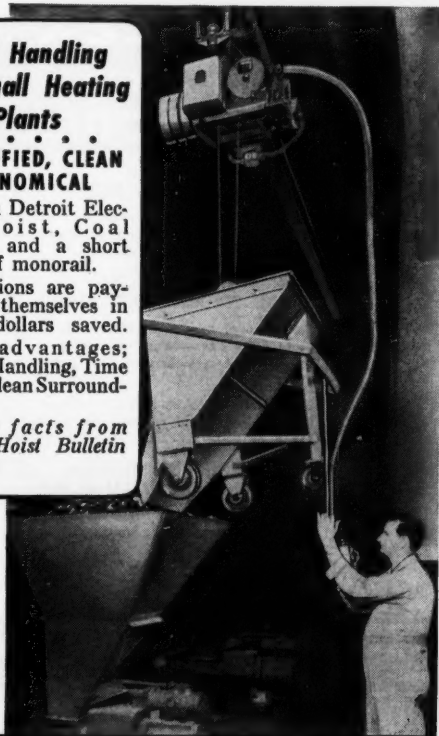
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Installations are paying for themselves in actual dollars saved.

Added advantages; Ease in Handling, Time Saved, Clean Surroundings.

Get the facts from Detroit Hoist Bulletin No. 805.

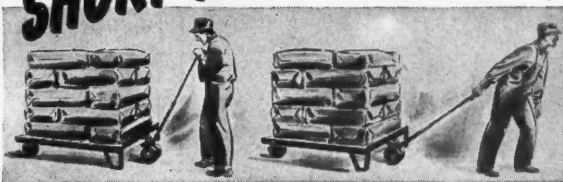


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DECEMBER, 1947

## USE THE IRONBOUND SHORT-HAUL SYSTEM



### TO SPEED PRODUCTION AND MINIMIZE EFFORT

● The Ironbound 'Short-Haul' skid is constructed from new billet steel and carefully selected hardwoods. Assembly is bolted and welded. It will carry loads up to 2500 pounds with absolute safety. A 'Short-Haul' system, properly planned, can greatly simplify moving tasks. The area of one unit will adequately store many immobilized units.

*Immediately Available in these Sizes*

SEMI-LIVE SKIDS	
EWL-17	24 x 36
EWL-17	24 x 48
EWL-17	30 x 42
EWL-17	30 x 48
EWL-17	36 x 48
EWL-37	36 x 60
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LIFT JACKS	
S-73	7 x 3 Semi-Steel Wheels
R-72	7 x 2 Rubber Tired Wheels
R-73	7 x 3 Rubber Tired Wheels



Ironbound engineers, located in principle cities, will be glad to make materials handling recommendations for speeding production and handling unusual loads.

## IRONBOUND

BOX & LUMBER COMPANY  
Materials Handling Division  
30 HOFFMAN PLACE • HILLSIDE, N. J.



BOUND TO BE BETTER  
**Ironbound**  
THE IRONBOUND ENGINEERING COMPANY

SEMI-LIVE SKIDS  
SKIDS • DOLLIES  
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*for Longer  
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CHARGE YOUR  
ELECTRICAL INDUSTRIAL  
TRUCK BATTERIES  
WITH THE



## TYPE "K" Automatic MOTOR-GENERATOR BATTERY CHARGER



Type "K"  
Single Circuit  
Control Panel

• Whether you need only a single-circuit battery charger or one that will charge from two to a dozen or more batteries at one time, there's a Hertner Type "K" motor-generator charger to suit your requirements — a fully automatic charging unit with:

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- 4 Automatic protection against reversal of current.
- 5 Overload protection to both motor and generator.

Mail the coupon for Bulletin 104 describing Hertner Type "K" single-circuit chargers, or Bulletin 108 describing Type "K" multiple-circuit chargers.

Right—3-Circuit  
Charger Control Panel



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A General Precision Equipment Corporation Subsidiary  
Motors • Motor Generators • Generator Sets  
CLEVELAND 11, OHIO  
Representatives in principal cities

#### THE HERTNER ELECTRIC CO.

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Send: Bulletin 104 ☐ Bulletin 108 ☐

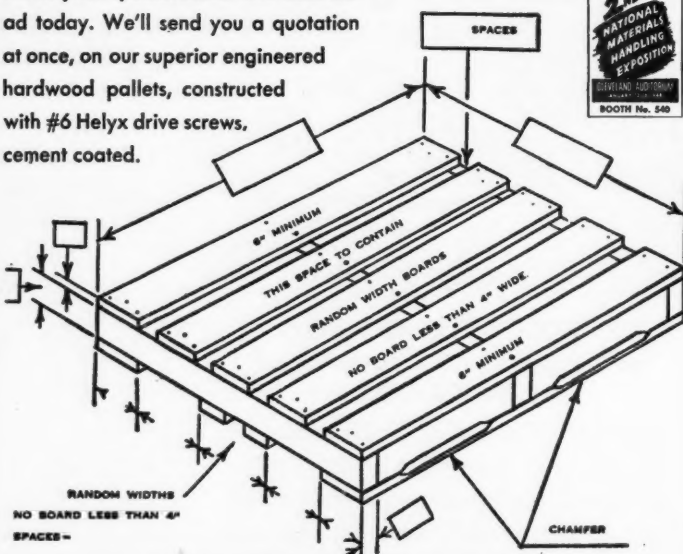
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Fill in your specifications and mail this ad today. We'll send you a quotation at once, on our superior engineered hardwood pallets, constructed with #6 Helyx drive screws, cement coated.



The IPCO representative is a materials-handling engineer. Consult him on your palletization problems... no obligation!



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PALLETS EXCLUSIVELY SINCE 1941

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### BONDS PERFECTLY — NEVER COMES LOOSE

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Many users apply "PERMAFLEX" over new concrete to prevent wearing away of the concrete under truck wheels and thus preserve structural strength.

The most severe trucking conditions in 400 of the largest industrial plants show no destructive effect on "PERMAFLEX" after years of use.

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Users include U. S. Steel, Bethlehem, Republic, General Motors, A. O. Smith, Western Electric and leading Railroads.

Test 100 square feet — be convinced.

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INSTALL  
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**12 1/2¢**  
per square  
foot

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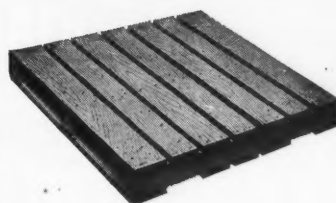
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Our large production means low prices.

### QUICK DELIVERIES

Send for Bulletin No. 4



Plant—Bedford, Va.

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## Special Equipment

FOR THE EFFICIENCY OF YOUR  
MATERIALS HANDLING



Designed and built to your specific needs, Fab-Weld all-steel equipment means top economy, strength and durability. Trucks, dump hoppers, skids, racks and bin boxes are examples of Fab-Weld geared-to-the-job engineering.

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CORPORATION

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# MATERIALS HANDLING EQUIPMENT

*Designed to do Specific Jobs Better*



## All Steel Welded UTILITIES RACK

Specially designed to facilitate the handling of parts and small items in course of production or assembly. All steel, welded construction. Standard dimensions: 24" wide, 50" high, 48" long overall, 12" clearance between shelves, weight 220 lbs. Two rigid and two swivel casters.

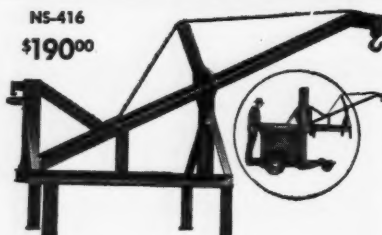
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NS-415M ..... \$61<sup>60</sup>  
(Roller bearing 6" x 2" metal wheels)

NS-415R ..... \$63<sup>80</sup>  
(Ball bearing 8" x 1½" rubber tired wheels)

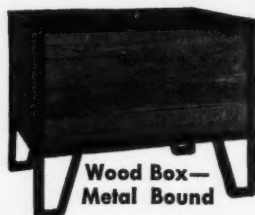
NS-416

\$190<sup>00</sup>



### Boom Skid for Lift Truck

Makes a boom truck out of any standard high-lift truck; also used on fork trucks. Of fabricated steel, welded. Boom 114" long, base 54" long. Weight 350 lbs.



### Wood Box— Metal Bound

For general utility use. Hardwood box, completely metal bound. Has four way lift truck entrance (side or ends). Give underneath clearance required for your lift truck.

NS-249A

\$32<sup>60</sup>

34" wide,  
42" long,  
20" deep

NS-249B

\$36<sup>05</sup>

34" wide,  
48" long,  
24" deep

NS-364

\$150<sup>00</sup>

Complete  
as shown



### Sheet Steel Grab

Handles sheet steel bundles up to 9" thick, 18" x 48" wide, any length—without slippage, distortion or damage to stock. Grabs used single, double or triple—capacity 1 ton per grab—total 3 tons. Supporting beam 6' long. Wt. 190 lbs.



B-465B

(Weight 407 lbs.)  
\$79<sup>00</sup>

B-465Y Dump Box Yoke

\$50<sup>00</sup>

### Automatic Dump Box

Designed for carrying and dumping of materials or parts—used with any hand or power lift or fork truck, also overhead hoist. Heavy gauge steel, reinforced.



B-727

### All- Metal Pallet Rack and Nesting Ring

Single face pallet rack with stacking corners—for handling irregular pieces. Nesting ring can be permanently welded to pallet. Special rolled channel steel. (We build all types to order.)

We design and build all types of trucks, skids, pallets, platforms, racks, boxes, bins, tables, etc.

When ordering give item number to prevent error. Weights approximate. All prices f.o.b. Detroit, Mich., subject to change without notice.

### Beverage Truck

For handling cases, kegs, barrels, hampers, bags, etc. All steel welded construction. Large ball bearing wheels with demountable rubber tires for easy, noiseless wheeling. Wt. 35 lbs.

B-490

\$18<sup>75</sup>



# Palmer-Shile Co.

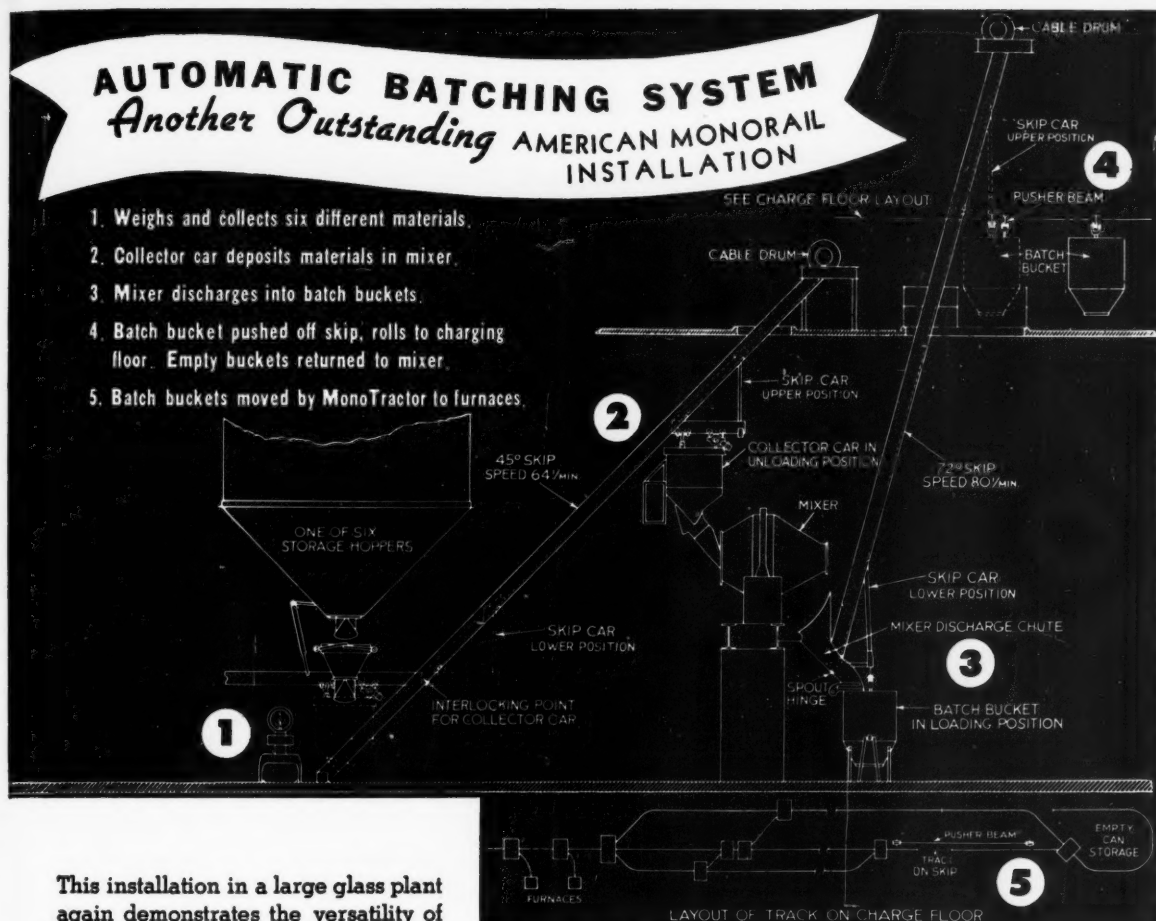
16012 Fullerton Avenue

Detroit 27, Michigan

# AUTOMATIC BATCHING SYSTEM

*Another Outstanding* AMERICAN MONORAIL INSTALLATION

1. Weighs and collects six different materials.
2. Collector car deposits materials in mixer.
3. Mixer discharges into batch buckets.
4. Batch bucket pushed off skip, rolls to charging floor. Empty buckets returned to mixer.
5. Batch buckets moved by MonoTractor to furnaces.

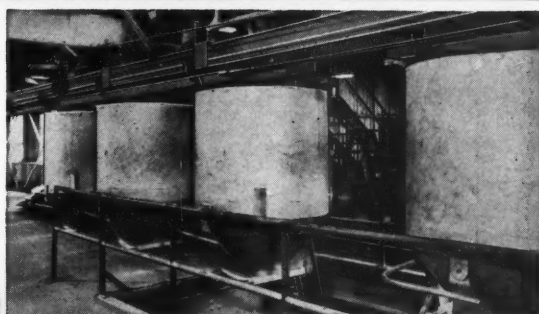
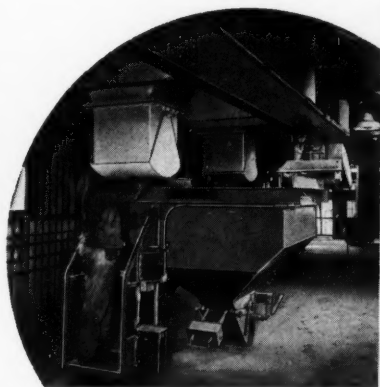


This installation in a large glass plant again demonstrates the versatility of American MonoRail engineering and equipment. Thirty tons of glass batch per hour are measured, mixed and delivered to furnaces by push button control. Let an American MonoRail engineer talk to you about your handling problems. He will show you how to save money and speed up production.

SEND FOR  
BULLETIN C-1



A 56-page book  
showing successful  
applications of  
American Mono-  
Rail Systems.



# THE AMERICAN MONORAIL COMPANY

13129 ATHENS AVENUE

CLEVELAND 7, OHIO

# *Greetings*

**At this season of the year we feel deeply grateful for the many friendships we enjoy. Christmas inspires us to express our gratitude for the happiness which the passing year has brought.**

**During 1947, FLOW reached the greatest group of readers in its history, making a host of new friends. We look forward to the New Year with hope and courage to do an even better job to merit the good will of all.**

**As you have so generously given us your friendship and confidence we want you to know that your faith in us has been appreciated . . . that we welcome the opportunity to serve you in the future as we have been privileged to do in the past. Please accept our sincere wishes for a very Merry Christmas and a Happy and Prosperous New Year.**

# *Flow*